TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		Attorney's Docket Number 70128
		U.S. Application No. (if known, see 37 C.F.R. 1.5) 09/830938
INTERNATIONAL APPLICATION NO. PCT/DE99/03448	INTERNATIONAL FILING DATE 28/October/1999	PRIORITY DATE CLAIMED 2/November/1998
TITLE OF INVENTION IDENTIFICATION LABEL AND PROCESS FOR PRODUCING AN IDENTIFICATION LABEL		
APPLICANT(S) FOR DO/EO/US FINN et al.		

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.

2. [ ] This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.

3. [X] This express request to begin national examination procedures (35 U.S.C. 371(f) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).

4. [X] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. [X] A copy of the International Application as filed (35 U.S.C. 371(C)(2))
   a. [ ] is transmitted herewith (required only If not transmitted by the International Bureau).
   b. [X] has been transmitted by the International Bureau.
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).

6. [X] A translation of the International Application into English (35 U.S.C. 371(c)(2)).

7. [ ] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [ ] are transmitted herewith (required only if not transmitted by the International Bureau).
   b. [ ] have been transmitted by the International Bureau.
   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [ ] have not been made and will not be made.

8. [ ] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. [ ] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

10. [ ] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other documents (s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98

12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [X] A FIRST preliminary amendment.
    [ ] A SECOND or SUBSEQUENT preliminary amendment.

14. [X] A substitute specification.

15. [ ] A change of power of attorney and/or address letter.

16. [X] Other items or information:
    Formal Drawings (4 sheets)
    Copy of Express Mail Receipt No. EL151019255US
    Marked Up Copy of the Translation
    Amended Pages Attached to Translation

U.S. Appln No. (If known, see 37 CFR 1.5) 09/830938	International Application No. PCT/DE99/03448	Attorney's Docket Number 70128

17. [X] The following fees are submitted: **BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):**	CALCULATIONS PTO USE ONLY
Search Report has been prepared by the EPO or JPO $860.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) $690.00	
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) $710.00	
Neither international preliminary examination fee (37 CFR 1.482 nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO $1,000.00	
International preliminary examination fee paid to USPTO (37 CFR 1 482) and all claims satisfied provisions of PCT Article 33(2)-(4) $100.00	

ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 860.00	
Surcharge of $130.00 for furnishing the oath or declaration later than [ ]20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(e))	$ 0	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	16 - 20 =	0	X $ 18.00	$ 0	
Independent claims	2 - 3 =	0	X $ 80.00	$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $270.00	$ 0	
TOTAL OF ABOVE CALCULATIONS =				$ 860.00	

Reduction of 1/2 for filing small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1,28)	$ 430.00	
SUBTOTAL =	$ 430.00	
Processing fee of $130.00 for furnishing the English translation late than [ ]20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +	$ 0	
TOTAL NATIONAL FEE =	$ 430 00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +	$ 0	
TOTAL FEES ENCLOSED =	$ 430.00	
	Amount to be: refunded	$
	charged	$

a. [X] A check in the amount of $ 430.00 to cover the above fees is enclosed.

b. [ ] Please charge my Deposit Account No. 13-0410 in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 13.0410. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

Send all correspondence to:

McGLEW AND TUTTLE, P.C.
Scarborough Station
Scarborough, NY 10510-0827

Signature

John James McGlew
Name

31,903
Registration Number

Attorney Docket: 70128

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: FINN et al.
Serial No	: 09/830,938
Confirm. No.	:
Filed	: May 2, 2001
For	: IDENTIFICATION LABEL...
Art Unit	:
Examiner	:
Dated	: June 26, 2001

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231
ATTENTION: BOX PCT

RESPONSE TO NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 USC 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE

Sir:

In response to the Notification of Missing Requirements Under 35 USC 371 in the United States Designated/Elected Office (DO/EO/US), mailed on June 8, 2001 please find enclosed the executed inventor(s) Declaration with the appropriate surcharge.

Also enclosed is the English Translation with the appropriate surcharge.

We trust that this matter is in order, but if there is any further action required please advise us immediately.

Respectfully submitted
for Applicant(s)

By: _____
Keith D. Moore
Registration No. 44,951

KDM:tf

70128.6

Enc.: Executed Declaration
Copy of Notification of Missing Requirements
Check in the amount of $195.00

DATED: June 26, 2001
SCARBOROUGH STATION
SCARBOROUGH, NEW YORK 10510-0827
(914) 941-5600

SHOULD ANY OTHER FEE BE REQUIRED, THE PATENT AND TRADEMARK OFFICE IS HEREBY REQUESTED TO CHARGE SUCH FEE TO OUR DEPOSIT ACCOUNT 13-0410.

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS EXPRESS MAIL IN AN ENVELOPE ADDRESSED TO: COMMISSIONER OF PATENTS AND TRADEMARKS, WASHINGTON, D.C. 20231, NO. EL455156895US

McGLEW AND TUTTLE, P.C., SCARBOROUGH STATION, SCARBOROUGH, NY 10510

BY: _____ DATE: June 26, 2001

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Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Re: ATTORNEY DOCKET: 70128
Customer Number: 000023872

Sir:

Attached please find the complete application papers and small entity fees in the above-identified application which are being placed in the U.S. Mail today, May 2, 2001, as Express Mail number EL151019255US.

A copy of the Express Mail receipt is also attached.

Respectfully submitted
for Applicant(s),

By: _____
John James McGlew
Reg. No. 31,903

JJM:ebl
Enclosures - Complete Application Papers and Fees
- Copy of Express Mail Receipt

DATED: May 2, 2001
SCARBOROUGH STATION
SCARBOROUGH, NEW YORK 10510-0827
(914) 941-5600

ATTORNEY DOCKET NO: 70128

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : FINN et al.
PCT No : PCT/DE99/03448
For : IDENTIFICATION LABEL...
Dated : May 2, 2001

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Prior to initial examination, please amend the above-identified application as follows:

IN THE SPECIFICATION:

Please replace the specification originally filed, with the enclosed substitute specification. A marked up copy of showing changes to the original translation is attached. Applicant states that no new matter has been added.

IN THE CLAIMS:

Please cancel claims 1 to 16 without prejudice and replace them with the following new claims:

17. (NEW) An identification label with a transponder unit for surface mounting on or mounting around an object, the label having a multi layered structure comprising:

an identification layer for optical marking;

a reinforcement layer for mechanical stabilization of the identification layer, said reinforcement layer forming a substrate with the transponder unit arranged thereon; and

an adhesion layer for mounting the identification label on the object.

18. (NEW) An identification label according to claim 17, further comprising a boundary layer formed between said reinforcement layer and said adhesion layer wherein the transponder unit extends into said boundary layer.

19. (NEW) An identification label according to claim 17, wherein said adhesion layer is covered with a deadening layer and said reinforcement layer is provided with a reinforcement device for mounting the identification label onto the object.

20. (NEW) A base unit as a semi-finished product for producing an identification label with a transponder unit for surface mounting on or for mounting around an object, the base unit comprising:

a reinforcement layer; and

an adhesion layer; and

a boundary layer formed between the reinforcement layer and the adhesion layer, the reinforcement layer serving as a substrate for arranging the transponder unit in the boundary layer.

21. (NEW) A base unit according to claim 20, wherein the transponder unit comprises a chip unit contacting an antenna coil made of wire and the reinforcement layer is provided with a window opening for at least proportionally accepting the chip unit and the antenna coil.

22. (NEW) A base unit according to claim 21, wherein the reinforcement layer is provided with additional window openings for accessing contact regions of the chip unit.

23. (NEW) A base unit according to claim 21, wherein the chip unit is at least partially surrounded by a reinforcement device surrounding the chip unit and extending in the plane of the reinforcement layer.

24. (NEW) A base unit according to claim 21, wherein the antenna coil is positioned on the reinforcement layer and is covered by the adhesion layer, forming a plane adhesion surface.

25. (NEW) A base unit according to claim 21, wherein the antenna coil is at least proportionally embedded in the reinforcement layer and is covered by the adhesion layer, forming a plane adhesion surface.

26. (NEW) A base unit according to claim 20, wherein the adhesion surface of the adhesion layer is covered by a deadening layer.

27. (NEW) A base unit according to claim 26, wherein the deadening layer is embodied by the clear surface of the reinforcement layer of an additional base unit.

28. (NEW) A process for producing an identification label with a transponder unit for surface mounting on or mounting around an object, comprising:

providing a base unit with a reinforcement layer, an adhesion layer and a boundary layer formed between the reinforcement layer and the adhesion layer with the reinforcement layer serving as a substrate for arranging the transponder unit in the boundary layer

applying an identification layer onto the base unit.

29. (NEW) A process according to claim 28, wherein a carrier layer is applied onto the base unit prior to applying the identification layer for forming an intermediate layer.

30. (NEW) A process according to claim 29 wherein a permanent adhesion layer is applied onto the base unit, the identification layer, or the carrier layer in order to be mounted between the base unit and the identification layer or the carrier layer.

31. (NEW) A process according to claim 28, wherein an additional adhesion layer is applied onto the base unit, the identification layer, or the carrier layer in order to be mounted between the base unit and the identification layer or the carrier layer.

32. (NEW) A process according to claim 28, wherein the coding of the identification layer and the coding of the transponder unit occur in a common coding process.

REMARKS

Claims 17 through 32 are in this application and are presented for consideration. Claims 1 through 16 have been canceled. The new claims present subject matter similar to the original claims, but in a different form.

The specification and claims have been amended in order to place this application in better form. The reference to claims in the specification has been deleted or amended. Appropriate headings have been added. No new matter has been added.

Favorable action on the merits is respectfully requested.

Respectfully submitted
for Applicant,

By: _____
John James McGlew
Registration No. 31,903
McGLEW AND TUTTLE, P.C.

JJM:jj/ebl
70128 1

Enclosed: Substitute Specification
Marked Up Copy of Translation

DATED: May 2, 2001
SCARBOROUGH STATION
SCARBOROUGH, NEW YORK 10510-0827

(914) 941-5600

SHOULD ANY OTHER FEE BE REQUIRED, THE PATENT AND TRADEMARK OFFICE IS HEREBY REQUESTED TO CHARGE SUCH FEE TO OUR DEPOSIT ACCOUNT 13-0410.

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS EXPRESS MAIL IN AN ENVELOPE ADDRESSED TO: COMMISSIONER OF PATENTS AND TRADEMARKS, WASHINGTON, D.C. 20231, NO.: EL151019255US.

McGLEW AND TUTTLE, P.C.
SCARBOROUGH STATION, SCARBOROUGH, NY 10510-0827

BY: _____ DATE: May 2, 2001

09/830938
JC08 Rec'd PCT/PTO 0 2 MAY 2001

Substitute Specification

Docket # 70128

IDENTIFICATION LABEL AND PROCESS FOR PRODUCING AN IDENTIFICATION LABEL

FIELD OF THE INVENTION

The present invention relates to an identification label with a transponder unit for surface mounting on or for mounting around an object provided with a multi-layered layer structure with an identification layer for optical marking, a reinforcement layer for mechanical stabilization of the identification layer and an adhesion layer for mounting the identification label on the object. Furthermore, the invention relates to a process for producing such an identification label as well as additionally a base unit for producing the identification label.

BACKGROUND OF THE INVENTION

Identification labels of the type mentioned in the outset are generally embodied as so-called "self-adhesive labels" for marking objects. A particularly large range of use is the field of luggage identification of airfreight parcels. In such applications, labels are used which are provided with an essentially three-layered structure in the applied state, namely one identification layer, oriented visibly outwards for the purpose of the primary identification of the corresponding luggage parcel which is provided with an optical marking, a reinforcement layer which serves as a carrier layer for the identification layer and its mechanical stabilization, and finally an adhesion layer which enables an adhesive mounting to the luggage parcel when contacting the surface of the corresponding luggage parcel.

The particular advantage of the known identification labels consists in their flexible nature, which enables an application of the labels not only on plane surfaces but on sharply curved surfaces as well, such as handles, for example.

In order to enable a touchless identification of the luggage parcels provided with the identification labels even at greater distances, in addition to an optical marking on the exterior identification layer of the identification label by means of so-called "bar-codes" and alphanumeric markings, it is desirable to combine the identification labels known per se with so-called transponder units which enable a touchless access to the information stored in a chip unit of the transponder unit. The chip unit contacts an antenna coil and forms the transponder unit together therewith. For this purpose, the chip unit and the antenna coil are positioned on a common transponder substrate. Attempts to combine such a transponder unit with an

identification label known per se for creating an overall identification label that allows an electronic marking in addition to an optical marking lead to an overall label structure in which a conventional identification label is supplemented with a transponder unit provided on the transponder substrate. Thus, an additional layer was added to the multi-layered layer structure of the conventional identification layer in form of the substrate of the transponder unit.

However, this change of the overall layer structure of the identification label results in disadvantages regarding the thickness and the flexibility of identification labels of such nature.

In EP-A-O 595 549 an identification label with a transponder and marking is disclosed with the transponder provided on a transponder substrate combined with a conventional identification label.

SUMMARY AND OBJECTS OF THE INVENTION

The invention is therefore based on the object to create an identification label improved in its functionality by means of a transponder unit without disadvantageous modifications to the layer structure of the identification label.

In the identification label according to the invention the reinforcement layer serves as a substrate for arranging the transponder unit. The functional expanse of an identification label with an electronic marking, allowed by the transponder unit, without changing the layer structure of the identification label, is enabled by using the reinforcement layer. This is provided in the layered structure of conventional identification labels. This reinforcement layer is used as a substrate for arranging the transponder unit. Thereby, the flexible and almost unlimited

application of the identification label onto objects, which specifically recommends the use of identification labels, is unobstructed in spite of the integration of a transponder unit in the layer structure. Therefore, a separate substrate for arranging the transponder unit can be omitted which would change the mechanical and geometrical characteristics of the layer structure of the identification label.

It has been proven to be particularly advantageous for the transponder unit to extend in a boundary layer between the reinforcement layer and the adhesion layer. With this, the adhesion layer serves the purpose of covering the transponder unit in a leveling fashion. This is particularly useful in the case of the transponder unit being applied essentially superficially onto the reinforcement layer. Thus, it is possible to use processes which lead to an antenna coil which is embedded in the reinforcement layer. It is also possible to use processes which lead to a surface application of the antenna coil, in particular, for creating and/or applying the antenna coil of the transponder unit, with the respective selection of the process for the creation and/or application of the antenna coil depending on the nature of the material of the reinforcement layer as well, i.e., whether the reinforcement layer allows at least a partial embedding of the antenna coil or only a surface application of the antenna coil.

In order to allow another type of mounting the identification label the adhesion layer can be covered with a deadening layer and the reinforcement layer can be provided with a mounting device, for example a mounting tape, for mounting the identification label onto an object.

The object the invention is based upon is also attained in a base unit for producing an identification label. The base unit according to the invention for producing an identification unit

for surface mounting on or for mounting around an object serves as the base for the further layer structure in the production of an identification label and includes a reinforcement layer and an adhesion layer with the reinforcement layer serving as the substrate for arranging a transponder unit in a boundary layer embodied between the reinforcement layer and the adhesion layer.

The base unit according to the invention allows providing a semi-finished product in the process of producing an identification label. Here, the semi-finished product is already provided with a transponder unit and shows a layer structure, which is part of the overall layer structure of conventional identification labels as well. Originating in the base unit according to the invention, the further production steps for finishing identification labels, known from the production of conventional identification labels, can occur in an unchanged manner in the production of an identification label according to the invention. Therefore, the base unit according to the invention offers the advantageous possibility for the producer of identification labels to maintain his process for processing and applying the exterior identification layer and his customary process for coding the exterior identification layer unchanged subsequent to the introduction of the base unit into his production process for producing identification labels.

It proves particularly advantageous for a mostly integrated arrangement of the transponder unit in the reinforcement layer to provide the reinforcement layer with a window opening for an at least proportional acceptance of a chip unit and the chip unit being in contact with an antenna coil made of wire for the embodiment of the transponder unit. On the one hand, the window opening allows a largely sunken arrangement of the chip unit in the reinforcement

layer, and, on the other hand, the condition of the antenna coil made of wire offers the possibility to arrange also the antenna coil by means of a suitable pressure effect at least proportionally sunken in the reinforcement layer. Hereby, overall the portion of the transponder unit projecting from the surface of the reinforcement layer is kept small so that even a very thin-layered embodiment of the adhesion layer is sufficient to cover the transponder unit in a leveling fashion.

Additional window openings in the reinforcement layer have been proven advantageous for contacting the contact ends of the antenna coil by accessing the contact regions of the chip unit.

It has also proven advantageous to surround the chip unit at least partially with a stiffening device extending in the level of the reinforcement layer in order to keep adverse mechanical pressures away from the chip unit during the production of the layer structure.

However, depending on the nature of the material of the reinforcement layer it is possible as well to provide the antenna coil made of wire on the surface of the reinforcement layer and to cover the antenna coil by a rather thick-layered embodiment of the adhesion layer in a leveling fashion.

In order to exclude the accidental adhesion of the adhesion layer of the base unit when the base unit is placed at disposal for further use in the production process for producing identification labels the possibility exists to cover the adhesion surface of the adhesion layer with a deadening layer. This deadening layer can be embodied, e. g. by a silicon paper layer applied onto the adhesion layer and easily removable therefrom.

The deadening layer can be embodied in the clear surface of the reinforcement layer of another base unit as well, at least while the base unit is placed at disposal for the subsequent use in the production of an identification label. A deadening layer embodied in such a fashion simultaneously provides a secure, temporarily stacked compound of a multitude of base units prior to their separation and utilization in the production process for producing an identification label.

An additional solution of the object the invention is based upon consists in performing a process in which, initially, a base unit is placed at disposal according to one or more of the process features noted above and, subsequently, an identification label is applied onto the base unit.

Therefore, the process according to the invention provides for the production of an identification label based on a previously produced base unit so that the producer of identification labels based on the base unit is able to produce an identification label which allows an optical as well as an electronic marking without the production process becoming more complex for the producer of identification labels than in the production of known conventional identification labels which allow only an optical marking.

Depending on the type of the construction of the identification layer the identification layer can be applied directly on the base unit or subsequently to a previous application of an intermediate layer as a carrier layer for the identification layer. A paper layer can be used as the carrier layer, for example.

For producing an adhesion between the base unit and the identification layer or the

carrier layer a permanent adhesion layer can be applied onto the base unit, the identification layer, or the carrier layer. Instead of the permanent adhesion layer another adhesion layer can be provided next to the initial adhesion layer as well.

It has proven particularly advantageous when, in a common process at the end of the production process for producing the identification labels, the coding of the exterior identification layer as well as the coding of the transponder unit and/or the chip unit of the transponder unit occurs in a common coding process. Thus, identification labels can be produced in a particularly easy and economical fashion which enables the recognition of identification data by means of an optical reader, based on the coding of the exterior identification layer, as well as the recognition of stored chip data by means of an electronic reader. Identification labels of such nature can equally be used in cooperation with optical and electronic reading devices, depending on equipment standard.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference is made to the accompanying drawings and descriptive matter in which a preferred embodiment of the invention is illustrated.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

Fig. 1. is a perspective view showing partially separated layers of an embodiment of an

identification label with an exterior identification layer and a transponder unit;

Fig. 2 is a partial sectional view of the identification label shown in Fig. 1 with the particular representation of a base unit;

Fig. 3 is a partial sectional view of the base unit shown in Fig. 2 having a permanent adhesion layer;

Fig. 4 is a partial sectional view of an identification layer with a transponder unit integrated into a conventional layer structure according to an initial embodiment;

Fig. 5 is a partial sectional view of a conventional identification label according to prior art;

Fig. 6 is a partial sectional view of another identification label with a modified configuration of the transponder unit;

Fig. 7 is a partial sectional view of a base unit with a reinforcement layer provided between two adhesion layers.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings in particular, Fig. 1 shows an identification label 10 with an exterior identification layer 11 which is applied onto a reinforcement layer 12 for the purpose of mechanically stabilizing the identification layer 11. On the bottom of the reinforcement layer 12 an adhesion layer 13 is provided formed from an adhesive glue application, which adhesion layer is connected tightly adhered to the bottom of the reinforcement layer 12. The adhesion layer 13 is provided with an adhesion surface 14 which is provided with a deadening layer 15 for deadening, i.e., for preventing the adhesion to a surface.

In order to better represent the separate layers of the layer structure the identification label 10 shown in Fig. 1 is shown in partially delaminated layers, i.e., separated from one another in partial regions, i.e., the identification layer 11, the reinforcement layer 12 with the adhesion layer 13 adhering thereto, and the deadening layer 15.

However, the left half of the identification label 10 shown in Fig. 1 is provided with a closed layer compound with separate layers, arranged directly on top of one another, in a manner equivalent to the original state of the identification label 10 prior to the separation of the deadening layer 15 from the adhesion layer 13 for application onto a surface of an object to be marked, not shown in detail here.

As discernible from the layer structure of the identification label 10 shown in Fig. 1 in a partially delaminated state the reinforcement layer 12 serves the purpose not only to be a mechanical stabilizer for the identification label 10 and/or the identification layer 11 but also simultaneously to be a substrate for arranging a transponder unit 16 as well. In the present case, the transponder unit 16 includes a chip unit, embodied here as the chip module 17, and an antenna coil 18 contacting the chip module 17, in the present case produced of copper wire.

In Fig. 1, for better showing the arrangement of the transponder unit 16 on the reinforcement layer 12 serving as a substrate, the reinforcement layer 12 is shown consisting of a transparent material. For additional description of the arrangement of the transponder unit 16 on the reinforcement layer 12, Fig. 2 shows an enlarged partial sectional representation of the reinforcement layer 12 with the deadening layer 15 being in adhesive contact with the adhesion layer 13 embodied on the bottom of the reinforcement layer 12 in the representation

according to Fig. 2. The layer compound, shown in Fig. 2, between the reinforcement layer 12 and the adhesion layer 13 applied to the bottom of the reinforcement layer 12 forms a base unit 19 which forms the identification label 10, supplemented by the identification layer 11 for forming the identification label 10 shown in Fig. 1. Here, in forming the identification layer 11 made of a material directly laminable onto a base material, the identification layer I I can be applied directly onto the upper structure surface 20 of the reinforcement layer 12 for forming the identification layer 10, for example under the influence of pressure and temperature, as in the case of the identification label 10 shown in Fig. 1.

The base and mounting unit 19, shown in Fig. 2, and formed from a layered compound of the reinforcement layer 12 and the adhesion layer 13, is provided with the transponder unit 16 in the region of a boundary layer 21 embodied between the reinforcement layer 12 and the adhesion layer 13. The chip module 17 having a chip and/or the form corpus 22, accepting the chip and called ämould" by those trained in the art, is inserted into a window opening 23 of the reinforcement layer 12 in order to enable a sunken acceptance of the chip module 17. Here, a contact carrier 24 of the chip module 17 serves, in addition to a restricting arrangement of the chip module 17 to an application surface 25 of the reinforcement layer 12, to contact the free contact ends 26, 27 of the antenna coil 18 made of coil wire 28. As further discernible from Fig. 2, the antenna coil 18, created by laying onto the application surface 25 of the reinforcement layer 12, for instance, is positioned embedded in the application surface 25 so that all other regions or parts of the transponder unit 16 are essentially positioned in the reinforcement layer 12, except the contact carrier 24 of the chip module 17 which contacts the contact ends 26, 27

via bumps 30, 31 provided on its contact side 29. This results in an adhesion layer 13 being sufficient even in a comparatively thin layered embodiment applied on the application surface 25 of the reinforcement layer 12, in order to completely cover the transponder unit 16 and/or the contact carrier 24 of the chip module 17 with the formation of a level adhesion surface 14 of the adhesion layer 13. In the present case, a silicon paper serves as the deadening layer 15 for deadening the adhesion surface 14 of the adhesion layer 13. For activating the adhesion surface 14 the deadening layer 15 can easily be pulled off.

Fig. 3 shows the base unit 19 at the beginning of the process for producing an identification label 32 shown in Fig. 4, also being shown in a partially sectional representation. The base unit 19 shown in Fig. 3 serves as the semi-finished product for the production of the identification label 32, i.e., as an intermediate product previously produced in an independent process, which is used as a unit for the purpose of the production of the identification label 32, i.e., as a layer of the overall layer structure to be produced. For creating the overall layer structure 36, shown in Fig. 4, forming the identification label 32, initially the structure surface 20 is provided with a permanent adhesion layer 33 which can be embodied as a hot-melt layer, for example, and which can be evenly distributed over the structure surface 20 of the reinforcement layer 12 by means of blade coating. Here, the free space 34 remaining after the insertion of the chip module 17 into the window opening 23 is at least partially filled with the adhesion material of the permanent adhesion layer 33.

Fig. 4 shows the further structure of the layers. Comparing the layer structure shown in Fig. 5 to a corresponding conventional identification label 35 according to prior art it is

obvious that, in the present case, the layer structure 36 of the conventional identification label 35, which is only provided with an exterior identification layer 11, is identical with the layer structure 36 of the embodiment of the identification label 32 according to the invention, shown in Fig. 4, which is provided with the transponder unit 16 in addition to the exterior identification layer 11. As Fig. 4 clearly shows, the transponder unit 16 is essentially provided in the boundary layer 21 between the reinforcement layer 12 and the adhesion layer 13 without influencing the overall layer structure 36 thereby.

The further layers of the overall layer structure 36, built onto the permanent adhesion layer 33, concern a paper layer 37, an adhesion layer 38 for producing an adhering connection to the identification layer 11, in the present case embodied as a so-called ‚thermo-layer", for example, and a sealing layer 39 which serves as the surface protection for the identification layer 11.

The identification label 32 shown in Fig. 4 is provided with the advantageous possibility, due to its overall layer structure being identical to the overall layer structure 36 of conventional identification labels 35, to be able to mark or code the exterior identification layer 11 after the production of the overall layer structure 36 in a thermoprinting process. An essential reason is here that, due to keeping the customary overall layer structure 36 in spite of the transponder unit 16 positioned in the overall layer structure 36, an overall thickness is allowed which enables a conventional printing of the identification label 32 in a thermoprinting process without any problems.

Fig. 6 shows a representation of an identification label 40, identical to the type of

representation in Fig. 4, which is embodied identically in its overall layer structure 36 with the identification layer 32 shown in Fig. 4.

Unlike the identification layer 32, the identification layer 40 is provided with a differently configured transponder unit 41, with the transponder unit 41 still being positioned in the boundary layer 21 between the reinforcement layer 12 and the adhesion layer 13, however, as discernible from a comparison of the Figs. 4 and 6. Unlike the identification label 32, the transponder unit 41 and/or an antenna coil 42 contacting the transponder unit 41 via the chip module 17 is not embedded in the material of the reinforcement layer 12 but rather positioned on the application surface 25 of the reinforcement layer 12. The difference in arranging the antenna coil 42 of the identification label 40 compared to arranging the antenna coil 18 of the identification label 32 can be caused by the type of process used for applying the antenna coil 42 as well as the material of the reinforcement layer 12, which for example does not allow embedding. However, in any case the antenna coil 42 is covered by the adhesion layer 13 in forming a leveled adhesion layer 14 so that here the overall layer structure 36 is maintained as well, in particular the layer structure of the base unit 19.

As further discernible from Fig. 6, the reinforcement layer 12 is provided with a window opening 43 adjusted to the neighboring contours of the form corpus 22 of the chip module 17. Additionally, in the present case the form corpus 22 is adjusted in its height h to the thickness d of the reinforcement layer 12 so that essentially no clear space remains in the window opening 43 and overall an essentially level structure surface 20 of the reinforcement layer 12 and/or the base unit 19 results. With regard to the material selection for the reinforcement layer 12 the use

of polypropylene has proven particularly advantageous since here a particularly easy embedding of the antenna coil 18 is possible, as shown in the exemplary embodiment of the identification label 32 in Fig. 4. As discernible from Fig. 6 and from the descriptions related to Fig. 6 respectively, corresponding material characteristics are not necessary, though, since even a rather superficial application of the antenna coil 42 onto the application surface 25 of the reinforcement layer 12 is possible just as well, without thereby influencing the overall layer structure 36. Thus, any material can be selected for the reinforcement layer 12 as long as the initial mechanically stabilizing function of the reinforcement layer 12 remains.

Although not shown in detail here, it is also possible to use transponder units in which the antenna coil and/or the contact ends of the antenna coil directly contact the chip, for example in directly providing the chip contact surfaces with bumps for contacting the contact ends of the antenna coil, unlike the transponder units 16 and/or 41 shown in Figs. 4 and 6 and which each relate to a chip module 17 in contact with an antenna coil 18 or 42 respectively. Therefore, in such an embodiment of the transponder unit the contact carrier 24 of the chip module 17 is omitted. However, it can be advantageous for a transponder unit produced in a direct connection of the chip to the antenna coil to provide a separate reinforcement device, peripherally surrounding the chip, which keeps adverse mechanical stresses away from the chip during the production of the layer structure, for example in the lamination process. However, such reinforcement devices can be advantageous for the utilization of the chip module 17 shown by way of example in Figs. 4 and 6 as well, in order to protect the chip provided in the form corpus 22. Fig. 4 shows, outlined in a dot-dash pattern, the possible exemplary embodiment of

a reinforcement device embodied here as a ring-shaped support bush 44.For installing the support bush 44, it is inserted into the window opening 23, as indicated in Fig. 4, prior to the insertion of the form corpus 22 of the chip module 17.

Unlike the base unit 19 shown in Fig. 3 which is provided with a permanent adhesion layer 33, Fig. 7 shows a base unit 45 with a reinforcement layer 46 which is provided on its structural surface 20 with a second adhesion layer 47, which can be identical in its composition to the adhesion layer 13 and which like the adhesion layer 13 can be embodied by an adhesive glue layer.

As further shown in Fig. 7, in addition to a window opening 48 for accepting the form corpus 22 of the chip module 17 surrounding the chip, the reinforcement layer 46 is provided with two additional window openings 49, 50 which allow a contacting access to the contact ends 26, 27 of the antenna coil 18 embedded in the reinforcement layer 46 during the construction of the base unit 45. Hereby, subsequently to the embedding of the antenna coil 18 and prior to the application of the adhesion layers 13, 47 onto the reinforcement layer 46 the chip module 17 is applied onto the application surface 25 of the reinforcement layer 46, simultaneously inserting the form corpus 22 into the window opening 48. Through the window openings 49, 50 the contact ends 26, 27 of the antenna coil 18 can be accessed in the region of the contact surfaces 51, 52 on the contact side 29 of the contact carrier 24 of the chip module 17so that contacting the contact ends 26, 27 is possible by the contact surfaces 51, 52 from above, where the structure surface 20 of the reinforcement layer 46 is arranged, by means of suitable bonding tools, not depicted in detail here. Subsequently, the adhesion layers 13 and

47are applied onto the structural surface 20 and the application surface 25of the reinforcement layer 46. Here, the adhesive glue material used for the construction of adhesion layers 13, 47 can be used for leveling unevenness and at least partially filling hollow spaces. The base unit 45 provided with another adhesion layer 47, shown in Fig. 7, can be modified into a ‚transponder tag" in a most easy fashion by applying deadening layers, here not shown in detail, which also allow a mounting onto objects with mounting means, such as tape or the like.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

ABSTRACT OF THE DISCLOSURE

An identification label (10) for surface mounting on or mounting around objects is provided with a multi-layered layer structure with an identification layer (11) for optical marking, a reinforcement layer (12) for mechanical stabilization of the identification layer, and an adhesion layer (13) for mounting the identification label on the object. The reinforcement layer serves as a substrate for arranging a transponder unit (16).

Marked up Copy of Eng. Translation

Docket # 70128

IDENTIFICATION LABEL AND PROCESS FOR PRODUCING AN IDENTIFICATION LABEL

FIELD OF THE INVENTION

The present invention relates to an identification label ~~with a transponder unit~~ for surface mounting ~~on~~ or for mounting around an object ~~providing~~provided with a mu~~l~~lti-layered layer structure with an identification layer for optical marking, a reinforcement layer for mechanical stabilization of the identification layer~~;~~ and an adhesion layer for mounting the identification label on the object. Furthermore, the invention relates to a process for producing such an identification label ~~and,as well as~~ additionally~~;~~ a base unit for ~~the production of~~producing the identification label.

BACKGROUND OF THE INVENTION

Identification labels of the type mentioned in the outset are generally embodied as so-called ~~self-adhesive labels" used~~"self-adhesive labels" for marking objects. A particularly large range of ~~application lies~~use ins the field of luggage identification of airfreight parcels. ~~Here~~ In such applications, labels are used which are provided with an essentially three-layered structure in the applied state, namely ~~an~~one identification layer, oriented visibly outwards for the purpose of the primary identification of the corresponding luggage parcel which is provided with an optical marking, ~~pointing visibly outward for the primary purpose of identifying the correlating luggage parcel~~, a reinforcement layer which serves ~~the purpose of mechanical stabilization and of being the~~as a carrier layer for the identification layer and its mechanical stabilization, and finally an adhesion layer which enables an adhesive mounting to the luggage parcel when contacting the surface of the ~~correlating~~corresponding luggage parcel.

The particular advantage of the known identification labels consists in their flexible ~~consistency~~nature, which enables an application of the labels not only on plane surfaces but on sharply curved surfaces as well, such as handles ~~of luggage parcels~~, for example.

In order to enable a touchless identification of the luggage parcels provided with the identification labels even at greater distances, in addition to an optical marking on the exterior identification layer of the identification label by means of so-called ~~äbar codes"~~"bar-codes" and alphanumeric markings, it is desirable to combine the identification labels known per se with

so-called transponder units which ~~allow~~enable a touchless access to the information stored in a chip unit of the transponder unit. The chip unit contacts an antenna coil ~~therewith forming~~and forms the transponder unit together therewith. For this purpose, the chip unit and the antenna coil are ~~provided~~positioned on a common transponder substrate. Attempts to combine such a transponder unit with an identification label known per se ~~in order to create~~for creating an overall identification label~~, allowing an optical marking and~~ that allows an electronic marking ~~as well,~~in addition to an optical marking lead to an overall label structure in which a conventional identification label is supplemented with a transponder unit ~~positioned~~provided on the transponder substrate. ~~Hereby~~Thus, an additional layer was added to the mufl̲ti-layered layer structure of the conventional identification ~~label~~layer ~~in the~~ form of the substrate of the transponder unit.

However, this change ~~in~~of the overall layer structure of the identification label results in disadvantages regarding the thickness and the flexibility of identification labels ~~constructed in such fashion.~~

~~Therefore, the invention is~~of such nature.

In EP-A-O 595 549 an identification label with a transponder and marking is disclosed with the transponder provided on a transponder substrate combined with a conventional identification label.

SUMMARY AND OBJECTS OF THE INVENTION

The invention is therefore based on the object to create an identification label improved in its functionality by means of a transponder unit without ~~creating any negative changes~~disadvantageous modifications to the layer structure of the identification label.

~~This object is attained in an identification label with the characteristics of claim 1.~~

In the identification label according to the invention the reinforcement layer serves as a substrate for arranging the transponder unit. The functional expanse of an identification label with an electronic marking, allowed by the transponder unit, without changing the layer structure of the identification label, is enabled by using the reinforcement layer~~, already~~. This is provided in the layered structure of conventional identification labels~~;~~. This reinforcement layer is used as a substrate for arranging the transponder unit. Thereby, the flexible and almost unlimited application of the identification label onto objects, which specifically recommends the use of identification labels, is unobstructed in spite of the integration of a transponder unit in the layer structure. Therefore, a separate substrate for arranging the transponder unit can be omitted which would change the mechanical and geometrical characteristics of the layer structure of the identification label.

It has been proven to be particularly advantageous for the transponder unit to extend in a boundary layer between the reinforcement layer and the adhesion layer~~ since, thereby~~. With this, the adhesion layer serves the purpose of covering the transponder unit in a leveling

fashion;. This ~~in particular,~~ s particularly useful in the case of the transponder unit being applied essentially superficially onto the reinforcement layer. Thus, it is possible to use processes which lead to an antenna coil which is ~~rather~~ embedded in the reinforcement layer ~~as well as~~. It is also possible to use processes which ~~rather~~ lead to a surface application of the antenna coil, in particular, for creating and/or applying the antenna coil of the transponder unit, with the respective selection of the process for the creation and/or application of the antenna coil depending on the nature of the material of the reinforcement layer as well, i.e., whether the reinforcement layer allows at least a partial embedding of the antenna coil or only a surface application of the antenna coil.

In order to allow another type of mounting the identification label the adhesion layer can be covered with a deadening layer and the reinforcement layer can be provided with a mounting device, for example a mounting tape, for mounting the identification label onto an object.

The object the invention is based upon is also attained in a base unit for producing an identification label ~~with~~: ~~the characteristics of claim 4.~~

The base unit according to the invention for producing an identification unit for surface mounting on or for mounting around an object serves as the base for the further layer structure in the production of an identification label and includes a reinforcement layer and an adhesion layer with the reinforcement layer serving as the substrate for arranging a transponder unit in

a boundary layer embodied between the reinforcement layer and the adhesion layer.

The base unit according to the invention allows providing a semi-finished product in the process of producing an identification label. Here, the semi-finished product is already provided with a transponder unit and shows a layer structure, which is part of the overall layer structure of conventional identification labels as well. Originating in the base unit according to the invention, the further production steps for finishing identification labels, known from the production of conventional identification labels, can occur in an unchanged manner in the production of an identification label according to the invention. Therefore, the base unit according to the invention offers the advantageous possibility for the producer of identification labels to maintain his process for processing and applying the exterior identification layer and his customary process for coding the exterior identification layer unchanged subsequent to the introduction of the base unit into his production process for producing identification labels.

It proves particularly advantageous for a mostly integrated arrangement of the transponder unit in the reinforcement layer to provide the reinforcement layer with a window opening for an at least proportional acceptance of a chip unit and the chip unit being in contact with an antenna coil made of wire for the embodiment of the transponder unit. On the one hand, the window opening allows a largely sunken arrangement of the chip unit in the reinforcement layer, and, on the other hand, the condition of the antenna coil made of wire offers the possibility to arrange also the antenna coil by means of a suitable pressure effect at least

proportionally sunken in the reinforcement layer. Hereby, overall the portion of the transponder unit projecting from the surface of the reinforcement layer is kept small so that even a very thin-layered embodiment of the adhesion layer is sufficient to cover the transponder unit in a leveling fashion.

Additional window openings in the reinforcement layer have been proven advantageous for contacting the contact ends of the antenna coil by accessing the contact regions of the chip unit.

It has also proven advantageous to surround the chip unit at least partially with a stiffening device extending in the level of the reinforcement layer in order to keep adverse mechanical pressures away from the chip unit during the production of the layer structure.

However, depending on the nature of the material of the reinforcement layer it is possible as well to provide the antenna coil made of wire on the surface of the reinforcement layer and to cover the antenna coil by a rather thick-layered embodiment of the adhesion layer in a leveling fashion.

In order to exclude the accidental adhesion of the adhesion layer of the base unit when the base unit is placed at disposal for further use in the production process for producing identification labels the possibility exists to cover the adhesion surface of the adhesion layer

with a deadening layer. This deadening layer can be embodied, e. g. by a silicon paper layer applied onto the adhesion layer and easily removable therefrom.

The deadening layer can be embodied in the clear surface of the reinforcement layer of another base unit as well, at least while the base unit is placed at disposal for the subsequent use in the production of an identification label. A deadening layer embodied in such a fashion simultaneously provides a secure, temporarily stacked compound of a multitude of base units prior to their separation and utilization in the production process for producing an identification label.

An additional solution of the object the invention is based upon consists in performing a process ~~according to claim 12~~ in which, initially, a base unit is placed at disposal according to one or more of the ~~claims 4 through 11~~process features noted above and, subsequently, an identification label is applied onto the base unit.

Therefore, the process according to the invention provides for the production of an identification label based on a previously produced base unit so that the producer of identification labels based on the base unit is able to produce an identification label which allows an optical as well as an electronic marking without the production process becoming more complex for the producer of identification labels than in the production of known conventional identification labels which allow only an optical marking.

Depending on the type of the construction of the identification layer the identification layer can be applied directly on the base unit or subsequently to a previous application of an intermediate layer as a carrier layer for the identification layer. A paper layer can be used as the carrier layer, for example.

For producing an adhesion between the base unit and the identification layer or the carrier layer a permanent adhesion layer can be applied onto the base unit, the identification layer, or the carrier layer. Instead of the permanent adhesion layer another adhesion layer can be provided next to the initial adhesion layer as well.

It has proven particularly advantageous when, in a common process at the end of the production process for producing the identification labels, the coding of the exterior identification layer as well as the coding of the transponder unit and/or the chip unit of the transponder unit occurs in a common coding process. Thus, identification labels can be produced in a particularly easy and economical fashion which enables the recognition of identification data by means of an optical reader, based on the coding of the exterior identification layer, as well as the recognition of stored chip data by means of an electronic reader. Identification labels of such nature can equally be used in cooperation with optical and electronic reading devices, depending on equipment standard.

~~In the following, an~~ The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference is made to the accompanying drawings and descriptive matter in which a preferred embodiment of the ~~identification label according to the invention and a modification therefrom for producing the identification label according to the process according to the~~ invention is ~~described in detail with the help of the drawings. They show:~~

~~Fig. 1. illustrated.~~

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

Fig. 1 is a perspective view showing partially separated layers of an embodiment of an identification label with an exterior identification layer and a transponder unit;

Fig. 2— is a partial sectional ~~representation~~view of the identification label shown in Fig. 1 with the particular representation of a base unit;

Fig. 3— is a partial sectional view of the base unit shown in Fig. 2 having a permanent adhesion layer;

Fig. 4— is a partial sectional view of an identification layer with a transponder unit integrated into a conventional layer structure according to an initial embodiment;

Fig. 5— is a partial sectional view of a conventional identification label according to prior art;

Fig. 6— is a partial sectional view of another identification label with a modified configuration of the transponder unit;

Fig. 7— is a partial sectional view of a base unit with a reinforcement layer provided between two adhesion layers.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings in particular, Fig. 1 shows an identification label 10 with an exterior identification layer 11 which is applied onto a reinforcement layer 12 for the purpose of mechanically stabilizing the identification layer 11. On the bottom of the reinforcement layer 12 an adhesion layer 13 is provided formed from an adhesive glue application, which adhesion layer is connected tightly adhered to the bottom of the reinforcement layer 12. The adhesion layer 13 is provided with an adhesion surface 14 which is provided with a deadening layer 15 for deadening, i.e., for preventing the adhesion to a surface.

In order to better represent the separate layers of the layer structure the identification label 10 shown in Fig. 1 is shown in partially delaminated layers, i.e., separated from one another in partial regions, i.e., the identification layer 11, the reinforcement layer 12 with the adhesion layer 13 adhering thereto, and the deadening layer 15.

However, the left half of the identification label 10 shown in Fig. 1 is provided with a closed layer compound with separate layers, arranged directly on top of one another, in a manner equivalent to the original state of the identification label 10 prior to the separation of the deadening layer 15 from the adhesion layer 13 for application onto a surface of an object to be marked, not shown in detail here.

As discernible from the layer structure of the identification label 10 shown in Fig. 1 in a partially delaminated state the reinforcement layer 12 serves the purpose not only to be a mechanical stabilizer for the identification label 10 and/or the identification layer 11 but also simultaneously to be a substrate for arranging a transponder unit 16 as well. In the present case, the transponder unit 16 includes a chip unit, embodied here as the chip module 17, and an antenna coil 18 contacting the chip module 17, in the present case produced of copper wire.

In Fig. 1, for better showing the arrangement of the transponder unit 16 on the reinforcement layer 12 serving as a substrate, the reinforcement layer 12 is shown consisting of a transparent material. For additional description of the arrangement of the transponder unit

16 on the reinforcement layer 12, Fig. 2 shows an enlarged partial sectional representation of the reinforcement layer 12 with the deadening layer 15 being in adhesive contact with the adhesion layer 13 embodied on the bottom of the reinforcement layer 12 in the representation according to Fig. 2. The layer compound, shown in Fig. 2, between the reinforcement layer 12 and the adhesion layer 13 applied to the bottom of the reinforcement layer 12 forms a base unit 19 which forms the identification label 10, supplemented by the identification layer 11 for forming the identification label 10 shown in Fig. 1. Here, in forming the identification layer 11 made of a material directly laminable onto a base material, the identification layer 11 can be applied directly onto the upper structure surface 20 of the reinforcement layer 12 for forming the identification layer 10, for example under the influence of pressure and temperature, as in the case of the identification label 10 shown in Fig. 1.

The base and mounting unit 19, shown in Fig. 2, and formed from a layered compound of the reinforcement layer 12 and the adhesion layer 13, is provided with the transponder unit 16 in the region of a boundary layer 21 embodied between the reinforcement layer 12 and the adhesion layer 13. The chip module 17 having a chip and/or the form corpus 22, accepting the chip and called ämould" by those trained in the art, is inserted into a window opening 23 of the reinforcement layer 12 in order to enable a sunken acceptance of the chip module 17. Here, a contact carrier 24 of the chip module 17 serves, in addition to a restricting arrangement of the chip module 17 to an application surface 25 of the reinforcement layer 12, to contact the free contact ends 26, 27 of the antenna coil 18 made of coil wire 28. As further discernible from Fig. 2, the antenna coil 18, created by laying onto the application surface 25 of the reinforcement

layer 12, for instance, is positioned embedded in the application surface 25 so that all other regions or parts of the transponder unit 16 are essentially positioned in the reinforcement layer 12, except the contact carrier 24 of the chip module 17 which contacts the contact ends 26, 27 via bumps 30, 31 provided on its contact side 29. This results in an adhesion layer 13 being sufficient even in a comparatively thin layered embodiment applied on the application surface 25 of the reinforcement layer 12, in order to completely cover the transponder unit 16 and/or the contact carrier 24 of the chip module 17 with the formation of a level adhesion surface 14 of the adhesion layer 13. In the present case, a silicon paper serves as the deadening layer 15 for deadening the adhesion surface 14 of the adhesion layer 13. For activating the adhesion surface 14 the deadening layer 15 can easily be pulled off.

Fig. 3 shows the base unit 19 at the beginning of the process for producing an identification label 32 shown in Fig. 4, also being shown in a partially sectional representation. The base unit 19 shown in Fig. 3 serves as the semi-finished product for the production of the identification label 32, i.e., as an intermediate product previously produced in an independent process, which is used as a unit for the purpose of the production of the identification label 32, i.e., as a layer of the overall layer structure to be produced. For creating the overall layer structure 36, shown in Fig. 4, forming the identification label 32, initially the structure surface 20 is provided with a permanent adhesion layer 33 which can be embodied as a hot-melt layer, for example, and which can be evenly distributed over the structure surface 20 of the reinforcement layer 12 by means of blade coating. Here, the free space 34 remaining after the insertion of the chip module 17 into the window opening 23 is at least partially filled with the

adhesion material of the permanent adhesion layer 33.

Fig. 4 shows the further structure of the layers. Comparing the layer structure shown in Fig. 5 to a corresponding conventional identification label 35 according to prior art it is obvious that, in the present case, the layer structure 36 of the conventional identification label 35, which is only provided with an exterior identification layer 11, is identical with the layer structure 36 of the embodiment of the identification label 32 according to the invention, shown in Fig. 4, which is provided with the transponder unit 16 in addition to the exterior identification layer 11. As Fig. 4 clearly shows, the transponder unit 16 is essentially provided in the boundary layer 21 between the reinforcement layer 12 and the adhesion layer 13 ~~applied to the bottom of the reinforcement layer 12 forms a base unit 19 which forms the identification label 10, supplemented by~~without influencing the overall layer structure 36 thereby.

The further layers of the overall layer structure 36, built onto the permanent adhesion layer 33, concern a paper layer 37, an adhesion layer 38 for producing an adhering connection to the identification layer 11 ~~for forming the identification label 10 shown in Fig. 1. Here, in forming~~, in the present case embodied as a so-called „thermo-layer", for example, and a sealing layer 39 which serves as the surface protection for the identification layer 11 ~~made of a material directly laminable onto a base material, the.~~

Text Missing Here.

The identification label 32 shown in Fig. 4 is provided with the advantageous possibility, due to its overall layer structure being identical to the overall layer structure 36 of conventional

identification labels 35, to be able to mark or code the exterior identification layer 11 after the production of the overall layer structure 36 in a thermoprinting process. An essential reason is here that, due to keeping the customary overall layer structure 36 in spite of the transponder unit 16 positioned in the overall layer structure 36, an overall thickness is allowed which enables a conventional printing of the identification label 32 in a thermoprinting process without any problems.

Fig. 6 shows a representation of an identification ~~layer 11 can be applied directly onto~~label 40, identical to the ~~upper~~type of representation in Fig. 4, which is embodied identically in its overall layer structure ~~surface 20 of the reinforcement layer 12 for forming~~36 with the identification layer ~~10, for example under the influence of pressure and temperature,~~ as32 shown in ~~the case of~~Fig. 4.

Unlike the identification ~~label 10 shown in Fig. 1.~~

~~The base and mounting unit 19, shown in Fig. 2, and formed from a~~ layered ~~compound of~~ 32, the ~~reinforcement layer 12 and the adhesion~~identification layer ~~13,~~40 is provided with a differently configured transponder unit 41, with the transponder unit ~~16~~41 still being positioned in the ~~region of a~~ boundary layer 21 ~~embodied~~ between the reinforcement layer 12 and the adhesion layer 13. ~~The~~, however, as discernible from a comparison of the Figs. 4 and 6. Unlike the identification label 32, the transponder unit 41 and/or an antenna coil 42 contacting the transponder unit 41 via the chip module 17 ~~having a chip and/or the form corpus 22, accepting~~

the chip and called ämould" by those trained in the art, is inserted into a window opening 23is not embedded in the material of the reinforcement layer 12 in order to enable a sunken acceptance of the chip module 17. Here, a contact carrier 24 of the chip module 17 serves, in addition to a restricting arrangement of the chip module 17 to anbut rather positioned on the application surface 25 of the reinforcement layer 12, to contact the free contact ends 26, 27 of. The difference in arranging the antenna coil 42 of the identification label 40 compared to arranging the antenna coil 18 made of coil wire 28. of the identification label 32 can be caused by the type of process used for applying the antenna coil 42 as well as the material of the reinforcement layer 12, which for example does not allow embedding. However, in any case the antenna coil 42 is covered by the adhesion layer 13 in forming a leveled adhesion layer 14 so that here the overall layer structure 36 is maintained as well, in particular the layer structure of the base unit 19.

As further discernible from Fig. 2,6, the reinforcement layer 12 is provided with a window opening 43 adjusted to the neighboring contours of the form corpus 22 of the chip module 17. Additionally, in the present case the form corpus 22 is adjusted in its height h to the thickness d of the reinforcement layer 12 so that essentially no clear space remains in the window opening 43 and overall an essentially level structure surface 20 of the reinforcement layer 12 and/or the base unit 19 results. With regard to the material selection for the reinforcement layer 12 the use of polypropylene has proven particularly advantageous since here a particularly easy embedding of the antenna coil 18, created by laying is possible, as shown in the exemplary embodiment of the identification label 32 in Fig. 4. As discernible from Fig. 6 and

from the descriptions related to Fig. 6 respectively, corresponding material characteristics are not necessary, though, since even a rather superficial application of the antenna coil 42 onto the application surface 25 of the reinforcement layer 12~~, for instance, is positioned embedded in the application surface 25 so that all other regions or parts of the transponder unit 16 are essentially positioned in~~ is possible just as well, without thereby influencing the overall layer structure 36. Thus, any material can be selected for the reinforcement layer 12~~, except~~ as long as the initial mechanically stabilizing function of the reinforcement layer 12 remains.

Although not shown in detail here, it is also possible to use transponder units in which the antenna coil and/or the contact ends of the antenna coil directly contact the chip, for example in directly providing the chip contact surfaces with bumps for contacting the contact ends of the antenna coil, unlike the transponder units 16 and/or 41 shown in Figs. 4 and 6 and which each relate to a chip module 17 in contact with an antenna coil 18 or 42 respectively. Therefore, in such an embodiment of the transponder unit the contact carrier 24 of the chip module 17 ~~which contacts~~is omitted. However, it can be advantageous for a transponder unit produced in a direct connection of the chip to the antenna coil to provide a separate reinforcement device, peripherally surrounding the chip, which keeps adverse mechanical stresses away from the chip during the production of the layer structure, for example in the lamination process. However, such reinforcement devices can be advantageous for the utilization of the chip module 17 shown by way of example in Figs. 4 and 6 as well, in order to protect the chip provided in the form corpus 22. Fig. 4 shows, outlined in a dot-dash pattern, the possible exemplary embodiment of a reinforcement device embodied here as a ring-shaped

support bush 44.For installing the support bush 44, it is inserted into the window opening 23, as indicated in Fig. 4, prior to the insertion of the form corpus 22 of the chip module 17.

Unlike the base unit 19 shown in Fig. 3 which is provided with a permanent adhesion layer 33, Fig. 7 shows a base unit 45 with a reinforcement layer 46 which is provided on its structural surface 20 with a second adhesion layer 47, which can be identical in its composition to the adhesion layer 13 and which like the adhesion layer 13 can be embodied by an adhesive glue layer.

As further shown in Fig. 7, in addition to a window opening 48 for accepting the form corpus 22 of the chip module 17 surrounding the chip, the reinforcement layer 46 is provided with two additional window openings 49, 50 which allow a contacting access to the contact ends 26, 27 ~~via bumps 30, 31 provided on its contact side 29. This results in an adhesion layer 13 being sufficient even in a comparatively thin layered embodiment applied on~~of the antenna coil 18 embedded in the reinforcement layer 46 during the construction of the base unit 45. Hereby, subsequently to the embedding of the antenna coil 18 and prior to the application of the adhesion layers 13, 47 onto the reinforcement layer 46 the chip module 17 is applied onto the application surface 25 of the reinforcement layer ~~12, in order to completely cover the transponder unit 16 and/or~~46, simultaneously inserting the form corpus 22 into the window opening 48. Through the window openings 49, 50 the contact ends 26, 27 of the antenna coil 18 can be accessed in the region of the contact surfaces 51, 52 on the contact side 29 of the contact carrier 24 of the chip module ~~17 with the formation of a level adhesion surface 14 of the adhesion layer 13. In the present case, a silicon paper serves as the deadening layer 15 for~~

deadening the adhesion surface 14 of the adhesion layer 13. For activating the adhesion surface 14 the deadening layer 15 can easily be pulled off.

Fig. 3 shows the base unit 19 at the beginning of the process for producing an identification label 32 shown in Fig. 4, also being shown in a partially sectional representation. The base unit 19 shown in Fig. 3 serves as the semi-finished product for the production of the identification label 32, i.e., as an intermediate product previously produced in an independent process, which is used as a unit for the purpose of the production of the identification label 32, i.e., as a layer of the overall layer structure to be produced. For creating the overall layer structure 36, shown in Fig. 4, forming the identification label 32, initially the structure surface 20 is provided with a permanent adhesion layer 33 which can be embodied as a hot-melt layer, for example, and which can be evenly distributed over 17 so that contacting the contact ends 26, 27 is possible by the contact surfaces 51, 52 from above, where the structure surface 20 of the reinforcement layer 12 by means of blade coating. Here, the free space 34 remaining after the insertion of the chip module 17 into the window opening 23 is at least partially filled with the adhesion material of the permanent adhesion layer 33.

Fig. 4 shows the further structure of the layers. Comparing the layer structure shown in Fig. 5 to a corresponding conventional identification label 35 according to prior art it is obvious that, in the present case, the layer structure 36 of the conventional identification label 35, which is only provided with an exterior identification layer 11, is identical with the layer structure 36 of

the embodiment of the identification label 32 according to the invention, shown in Fig. 4, which is provided with the transponder unit 16 in addition to the exterior identification layer 11. As Fig. 4 clearly shows, the transponder unit 16 is essentially provided in the boundary layer 21 between the reinforcement layer 12 and46 is arranged, by means of suitable bonding tools, not depicted in detail here. Subsequently, the adhesion layer 13 without influencing the overall layer structure 36 thereby.

The further layers of the overall layer structure 36, built onto the permanent adhesion layer 33, concern a paper layer 37, an adhesion layer 38 for producing an adhering connection to the identification layer 11, in the present case embodied as a so-called „thermo-layer", for example, and a sealing layer 39 which serves as the surface protection for the identification layer 11.

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Fig. 6 shows a representation of an identification label 40, identical to the type of representation in Fig. 4, which is embodied identically in its overall layer structure 36 with the identification layer 32 shown in Fig. 4.

Unlike the identification layer 32, the identification layer 40 is provided with a differently configured transponder unit 41, with the transponder unit 41 still being positioned in the

boundary layer 21 between the reinforcement layer 12 and the adhesion layer 13, however, as discernible from a comparison of the Figs. 4 and 6. Unlike the identification label 32, the transponder unit 41 and/or an antenna coil 42 contacting the transponder unit 41 via the chip module 17 is not embedded in the material ofs 13 and 47are applied onto the structural surface 20 and the application surface 25of the reinforcement layer 12 but rather positioned on the application surface 25 of the reinforcement layer 12. The difference in arranging the antenna coil 42 of the identification label 40 compared to arranging the antenna coil 18 of the identification label 32 can be caused by the type of process used for applying the antenna coil 42 as well as the material of the reinforcement layer 12, which for example does not allow embedding. However, in any case the antenna coil 42 is covered by the46. Here, the adhesive glue material used for the construction of adhesion layers 13, 47 can be used for leveling unevenness and at least partially filling hollow spaces. The base unit 45 provided with another adhesion layer 13 in forming a leveled adhesion layer 14 so that here the overall layer structure 36 is maintained as well, in particular the layer structure of the base unit 19.

As further discernible from Fig. 6, the reinforcement layer 12 is provided with a window opening 43 adjusted to the neighboring contours of the form corpus 22 of the chip module 17. Additionally, in the present case the form corpus 22 is adjusted in its height h to the thickness d of the reinforcement layer 12 so that essentially no clear space remains in the window opening 43 and overall an essentially level structure surface 20 of the reinforcement layer 12 and/or the base unit 19 results. With regard to the material selection for the reinforcement layer 12 the use

of polypropylene has proven particularly advantageous since here a particularly easy embedding of the antenna coil 18 is possible, as shown in the exemplary embodiment of the identification label 32 in Fig. 4. As discernible from Fig. 6 and from the descriptions related to Fig. 6 respectively, corresponding material characteristics are not necessary, though, since even a rather superficial47, shown in Fig. 7, can be modified into a „transponder tag" in a most easy fashion by applying deadening layers, here not shown in detail, which also allow a mounting onto objects with mounting means, such as tape or the like.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the antenna coil 42 onto the application surface 25 of the reinforcement layer 12 is possible just as well, without thereby influencing the overall layer structure 36. Thus, any material can be selected for the reinforcement layer 12 as long as the initial mechanically stabilizing function of the reinforcement layer 12 remains.

Although not shown in detail here, it is also possible to use transponder units in which the antenna coil and/or the contact ends of the antenna coil directly contact the chip, for example in directly providing the chip contact surfaces with bumps for contacting the contact ends of the antenna coil, unlike the transponder units 16 and/or 41 shown in Figs. 4 and 6 and which each relate to a chip module 17 in contact with an antenna coil 18 or 42 respectively. Therefore, in such an embodiment of the transponder unit the contact carrier 24 of the chip module 17 is omitted. However, it can be advantageous for a transponder unit produced in a direct connection of the chip to the antenna coil to provide a separate reinforcement device,

peripherally surrounding the chip, which keeps adverse mechanical stresses away from the chip during the production of the layer structure, for example in the lamination process. However, such reinforcement devices can be advantageous for the utilization of the chip module 17 shown by way of example in Figs. 4 and 6 as well, in order to protect the chip provided in the form corpus 22. Fig. 4 shows, outlined in a dot-dash pattern, the possible exemplary embodiment of a reinforcement device embodied here as a ring-shaped support bush 44.For installing the support bush 44, it is inserted into the window opening 23, as indicated in Fig. 4, prior to the insertion of the form corpus 22 of the chip module 17.

Unlike the base unit 19 shown in Fig. 3 which is provided with a permanent adhesion layer 33, Fig. 7 shows a base unit 45 with a reinforcement layer 46 which is provided on its structural surface 20 with a second adhesion layer 47, which can be identical in its composition to the adhesion layer 13 and which like the adhesion layer 13 can be embodied by an adhesive glue layer.

As further shown in Fig. 7, in addition to a window opening 48 for accepting the form corpus 22 of the chip module 17 surrounding the chip, the reinforcement layer 46 is provided with two additional window openings 49, 50 which allow a contacting access to the contact ends 26, 27 of the antenna coil 18 embedded in the reinforcement layer 46 during the construction of the base unit 45. Hereby, subsequently to the embedding of the antenna coil 18 and prior to the application of the adhesion layers 13, 47 onto the reinforcement layer 46 the chip module 17

is applied onto the application surface 25 of the reinforcement layer 46, simultaneously inserting the form corpus 22 into the window opening 48. Through the window openings 49, 50 the contact ends 26, 27 of the antenna coil 18 can be accessed in the region of the contact surfaces 51, 52 on the contact side 29 of the contact carrier 24 of the chip module 17so that contacting the contact ends 26, 27 is possible by the contact surfaces 51, 52 from above, where the structure surface 20 of the reinforcement layer 46 is arranged, by means of suitable bonding tools, not depicted in detail here. Subsequently, the adhesion layers 13 and 47are applied onto the structural surface 20 and the application surface 25of the reinforcement layer 46. Here, the adhesive glue material used for the construction of adhesion layers 13, 47 can be used for leveling unevenness and at least partially filling hollow spaces. The base unit 45 provided with another adhesion layer 47, shown in Fig. 7, can be modified into a ‚transponder tag" in a most easy fashion by applying deadening layers, here not shown in detail, which also allow a mounting onto objects with mounting means, such as tape or the like.

~~Claims~~

~~1.~~ principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

ABSTRACT OF THE DISCLOSURE

An identification label (10) for surface mounting ~~or form~~ or mounting around ~~an~~ ~~object,~~objects is provided with a multi-layered layer structure with an identification layer (11) for optical marking, a reinforcement layer (12) for mechanical stabilization of the identification layer, and an adhesion layer (13) for mounting the identification label ~~to~~on the object~~,~~ ~~characterized in that t~~. The reinforcement layer ~~(12, 46)~~ serves as ~~the~~a substrate for arranging a transponder unit (16~~, 41~~).

~~2. An identification label according to claim 1, characterized in that the transponder unit (16, 41) extends in a boundary layer (21) formed between the reinforcement layer (12, 46) and the adhesion layer (13).~~

~~3. An identification label according to claim 1 or 2, characterized in that the adhesion layer (13) is covered by a deadening layer (15) and the reinforcement layer (12. 46) is provided with a mounting device for mounting the identification label to the object.~~

~~4. A base unit for producing an identification label for surface mounting or mounting around an object, including a reinforcement layer and an adhesion layer, characterized in that the reinforcement layer (12, 46) serves as a substrate for arranging a transponder unit (16, 41) in a boundary layer (21) formed between the reinforcement layer (12, 46) and the adhesion layer~~

(13).

5. A base unit according to claim 4, characterized in that the reinforcement layer (12, 46) is provided with a window opening (23, 43, 48) for at least proportionally accepting a chip unit (17) and the chip unit contacting an antenna coil (18, 42) made of wire (28) for forming the transponder unit (16, 41).

6. A base unit according to claim 5, characterized in that the reinforcement layer (12) is provided with additional window openings (49, 50) for accessing the contact regions (51, 52) of the chip unit (17).

7. A base unit according to claim 5 or 6, characterized in that the chip unit (17) is at least partially surrounded by a reinforcement device (44) surrounding the chip unit and extending in the level of the reinforcement layer (12, 46).

8. A base unit according to one or more of the claims 5 through 7, characterized in that the antenna coil (41) is positioned on the reinforcement layer (12) and is covered by the adhesion layer (13), forming a plane adhesion surface (14).

~~9. A base unit according to one or more of the claims 5 through 7, characterized in that the antenna coil (18) is at least proportionally embedded in the reinforcement layer (12, 46) and is covered by the adhesion layer (13, 47), forming a plane adhesion surface (14).~~

~~10. A base unit according to one or more of the claims 4 through 9, characterized in that the adhesion surface (14) of the adhesion layer (13, 47) is covered by a deadening layer (15).~~

~~11. A base unit according to claim 10, characterized in that the deadening layer is embodied by the clear surface of the reinforcement layer (12, 46) of an additional base unit (19).~~

~~12. A process for producing an identification label according to one or more of the claims 1 through 3, characterized in that a base unit (19) according to one or more of the claims 4 through 11is provided and an identification layer (11) is applied onto the base unit (19).~~

~~13. A process according to claim 12, characterized in that a carrier layer (37) is applied onto the base unit (19, 45) prior to applying the identification layer (11) for forming an intermediate layer.~~

~~14. A process according to claim 12 or 13, characterized in that a permanent adhesion layer (33) is applied onto the base unit (19), the identification layer (11), or the carrier layer~~

(37) in order to be mounted between the base unit (19) and the identification layer (11) or the carrier layer (37).

15. A process according to claim 12 or 13, characterized in that an additional adhesion layer (47) is applied onto the base unit (45), the identification layer (11), or the carrier layer (37) in order to be mounted between the base unit (45) and the identification layer (11) or the carrier layer (37).

16. A process according to one or more of the claims 12 through 15, characterized in that the coding of the identification layer (11) and the coding of the transponder unit (16, 41) occur in a common coding process.

~~Abstract~~

~~An identification label (10) for surface mounting on or mounting around objects, provided with a multi-layered layer structure with an identification layer (11) for optical marking, a reinforcement layer (12) for mechanical stabilization of the identification layer, and an adhesion layer (13) for mounting the identification label on the object with the reinforcement layer serving as a substrate for arranging a transponder unit (16).~~

(Fig. 1)

Amended sheet 1

Identification Label and Process for Producing an Identification Label

5

The present invention relates to an identification label with a transponder unit for surface mounting on or for mounting around an object provided with a multi-layered layer structure with an identification layer for optical marking, a reinforcement layer for mechanical stabilization of the identification layer and an adhesion layer for mounting the identification label on the object. Furthermore, the invention relates to a process for producing such an identification label as well as additionally a base unit for producing the identification label. Identification labels of the type mentioned in the outset are generally embodied as so-called äself-adhesive labels" for marking objects. A particularly large range of use is the field of luggage identification of airfreight parcels. Here, labels are used which are provided with an essentially three-layered structure in the applied state, namely one identification layer, oriented visibly outwards for the purpose of the primary identification of the corresponding luggage parcel which is provided with an optical marking, a reinforcement layer which serves as a carrier layer for the identification layer and its mechanical stabilization, and finally an adhesion layer

~~which enables an adhesive mounting to the luggage parcel when contacting the surface of the corresponding luggage parcel.~~

Amended sheet 2

The particular advantage of the known identification labels consists in their flexible nature, which enables an application of the labels not only on plane surfaces but on sharply curved surfaces as well, such as handles, for example.

In order to enable a touchless identification of the luggage parcels provided with the identification labels even at greater distances, in addition to an optical marking on the exterior identification layer of the identification label by means of so-called äbar-codes" and alphanumeric markings, it is desirable to combine the identification labels known per se with so-called transponder units which enable a touchless access to the information stored in a chip unit of the transponder unit. The chip unit contacts an antenna coil and forms the transponder unit together therewith. For this purpose, the chip unit and the antenna coil are positioned on a common transponder substrate. Attempts to combine such a transponder unit with an identification label known per se for creating an overall identification label that allows an electronic marking in addition to an optical marking lead to an overall label structure in which a conventional identification label is supplemented with a transponder unit provided on the transponder substrate. Thus, an additional layer was added to the multi-layered layer structure of the conventional identification layer in form of the substrate of the transponder unit.

~~However, this change of the overall layer structure of the identification label results in disadvantages regarding the thickness and the flexibility of identification labels of such nature.~~

~~In EP-A-O 595 549 an identification label with a transponder and marking is known with the transponder provided on a transponder substrate being combined with a conventional identification label.~~

~~Amended sheet 2a~~

~~The invention is therefore based on the object to create an identification label improved in its functionality by means of a transponder unit without disadvantageous modifications to the layer structure of the identification label.~~

~~Amended sheet 16~~

~~Claims~~

~~1. An identification label with a transponder unit for surface-mounting on or mounting around an object provided with a multi-layered layer structure with an identification layer for optical marking, a reinforcement layer for mechanical stabilization of the identification layer, and an adhesion layer for mounting the identification label on the object, characterized in that the reinforcement layer (12, 46) serves as a substrate for arranging the transponder unit (16, 41).~~

~~2. An identification label according to claim 1, characterized in that the transponder unit (16, 41) extends in a boundary layer (21) formed between the reinforcement layer (12, 46) and the adhesion layer (13).~~

3. An identification label according to claim 1 or 2, characterized in that the adhesion layer (13) is covered with a deadening layer (15) and the reinforcement layer (12, 46) is provided with a reinforcement device for mounting the identification label onto the object.

4. A base unit as a semi-finished product for producing an identification label with a transponder unit for surface mounting on or for mounting around an object, including a reinforcement layer and an adhesion layer, characterized in that the reinforcement layer (12, 46) serves as a substrate for arranging the transponder unit 30 (16, 41) in a boundary layer (21) formed between the reinforcement layer (12, 46) and the adhesion layer (13).

Amended sheet 17

5. A base unit according to claim 4, characterized in that the reinforcement layer (12, 46) is provided with a window opening (23, 43, 48) for at least proportionally accepting a chip unit (17) and the chip unit contacts an antenna coil (18, 42) made of wire (28) for forming the transponder unit (16, 41).

6. A base unit according to claim 5, characterized in that the reinforcement layer (12) is provided with additional window openings (49, 50) for accessing the contact regions (S 1, 52) of the chip unit (17).

~~7. A base unit according to claim 5 or 6, characterized in that the chip unit (17) is at least partially surrounded by a reinforcement device (44) surrounding the chip unit and extending in the plane of the reinforcement layer (12, 46).~~

IDENTIFICATION LABEL AND PROCESS FOR PRODUCING AN IDENTIFICATION LABEL

The present invention relates to an identification label for surface mounting or for mounting around an object providing a mufti-layered layer structure with an identification layer for optical marking, a reinforcement layer for mechanical stabilization of the identification layer, and an adhesion layer for mounting the identification label on the object. Furthermore, the invention relates to a process for producing such an identification label and, additionally, a base unit for the production of the identification label.

Identification labels of the type mentioned in the outset are generally embodied as so-called self-adhesive labels" used for marking objects. A particularly large range of application lies in the field of luggage identification of airfreight parcels. Here, labels are used which are provided with an essentially threelayered structure in the applied state, namely an identification layer, provided with an optical marking, pointing visibly outward for the primary purpose of identifying the correlating luggage parcel, a reinforcement layer which serves the purpose of mechanical stabilization and of being the carrier layer for the identification layer, and finally an adhesion layer which enables an adhesive mounting to the luggage parcel when contacting the surface of the correlating luggage parcel.

The particular advantage of the known identification labels consists in their flexible consistency which enables an application of the labels not only on plane surfaces but on sharply curved surfaces as well, such as handles of luggage parcels, for example.

In order to enable a touchless identification of the luggage parcels provided with the identification labels even at greater distances, in addition to an optical marking on the exterior identification layer of the identification label by means of so-called äbar codes" and alphanumeric markings, it is desirable to combine the identification labels known per se with so-called transponder units which allow a touchless access to information stored in a chip unit of the transponder unit. The chip unit contacts an antenna coil therewith forming the transponder unit. For this purpose, the chip unit and the antenna coil are provided on a common transponder substrate. Attempts to combine such a transponder unit with an identification label known per se in order to create an overall identification label, allowing an optical marking and an electronic marking as well, lead to an overall label structure in which a conventional identification label is supplemented with a transponder unit positioned on the transponder substrate. Hereby, an additional layer was added to the mufti-layered layer structure of the conventional identification label in the form of the substrate of the transponder unit. However, this change in the overall layer structure of the identification label results in disadvantages regarding the thickness and flexibility of identification labels constructed in such fashion.

Therefore, the invention is based on the object to create an identification label improved in its functionality by means of a transponder unit without creating any negative changes to the layer structure of the identification label.

This object is attained in an identification label with the characteristics of claim 1.

In the identification label according to the invention the reinforcement layer serves as a substrate for

arranging the transponder unit. The functional expanse of an identification label with an electronic marking, allowed by the transponder unit, without changing the layer structure of the identification label is enabled by using the reinforcement layer, already provided in the layered structure of conventional identification labels, as a substrate for arranging the transponder unit. Thereby, the flexible and almost unlimited application of the identification label onto objects, which specifically recommends the use of identification labels, is unobstructed in spite of the integration of a transponder unit in the layer structure. Therefore, a separate substrate for arranging the transponder unit can be omitted which would change the mechanical and geometrical characteristics of the layer structure of the identification label.

It has been proven particularly advantageous for the transponder unit to extend in a boundary layer between the reinforcement layer and the adhesion layer since, thereby, the adhesion layer serves the purpose of covering the transponder unit in a leveling fashion, in particular, in case of the transponder unit being applied essentially superficially onto the reinforcement layer. Thus, it is possible to use processes which lead to an antenna coil which is rather embedded in the reinforcement layer as well as processes which rather lead to a surface application of the antenna coil, in particular, for creating and/or applying the antenna coil of the transponder unit, with the respective selection of the process for the creation and/or application of the antenna coil depending on the nature of the material of the reinforcement layer as well, i.e., whether the reinforcement layer allows at least a partial embedding of the antenna coil or only a surface application of the antenna coil.

In order to allow another type of mounting the identification label the adhesion layer can be covered

with a deadening layer and the reinforcement layer can be provided with a mounting device, for example a mounting tape, for mounting the identification label onto an object.

The object the invention is based upon is also attained in a base unit for producing an identification label with the characteristics of claim 4.

The base unit according to the invention for producing an identification unit for surface mounting on or for mounting around an object serves as the base for the further layer structure in the production of an identification label and includes a reinforcement layer and an adhesion layer with the reinforcement layer serving as the substrate for arranging a transponder unit in a boundary layer embodied between the reinforcement layer and the adhesion layer.

The base unit according to the invention allows providing a semi-finished product in the process of producing an identification label. Here, the semi-finished product is already provided with a transponder unit and shows a layer structure, which is part of the overall layer structure of conventional identification labels as well. Originating in the base unit according to the invention, the further production steps for finishing identification labels, known from the production of conventional identification labels, can occur in an unchanged manner in the production of an identification label according to the invention. Therefore, the base unit according to the invention offers the advantageous possibility for the producer of identification labels to maintain his process for processing and applying the exterior identification layer and his customary process for coding the exterior identification layer unchanged subsequent to the introduction of the base unit into his

production process for producing identification labels.

It proves particularly advantageous for a mostly integrated arrangement of the transponder unit in the reinforcement layer to provide the reinforcement layer with a window opening for an at least proportional acceptance of a chip unit and the chip unit being in contact with an antenna coil made of wire for the embodiment of the transponder unit. On the one hand, the window opening allows a largely sunken arrangement of the chip unit in the reinforcement layer, and, on the other hand, the condition of the antenna coil made of wire offers the possibility to arrange also the antenna coil by means of a suitable pressure effect at least proportionally sunken in the reinforcement layer. Hereby, overall the portion of the transponder unit projecting from the surface of the reinforcement layer is kept small so that even a very thin-layered embodiment of the adhesion layer is sufficient to cover the transponder unit in a leveling fashion.

Additional window openings in the reinforcement layer have been proven advantageous for contacting the contact ends of the antenna coil by accessing the contact regions of the chip unit.

It has also proven advantageous to surround the chip unit at least partially with a stiffening device extending in the level of the reinforcement layer in order to keep adverse mechanical pressures away from the chip unit during the production of the layer structure.

However, depending on the nature of the material of the reinforcement layer it is possible as well to provide the antenna coil made of wire on the surface of the reinforcement layer and to cover the

antenna coil by a rather thick-layered embodiment of the adhesion layer in a leveling fashion.

In order to exclude the accidental adhesion of the adhesion layer of the base unit when the base unit is placed at disposal for further use in the production process for producing identification labels the possibility exists to cover the adhesion surface of the adhesion layer with a deadening layer. This deadening layer can be embodied, e. g. by a silicon paper layer applied onto the adhesion layer and easily removable therefrom.

The deadening layer can be embodied in the clear surface of the reinforcement layer of another base unit as well, at least while the base unit is placed at disposal for the subsequent use in the production of an identification label. A deadening layer embodied in such a fashion simultaneously provides a secure, temporarily stacked compound of a multitude of base units prior to their separation and utilization in the production process for producing an identification label.

An additional solution of the object the invention is based upon consists in performing a process according to claim 12 in which, initially, a base unit is placed at disposal according to one or more of the claims 4 through 11 and, subsequently, an identification label is applied onto the base unit.

Therefore, the process according to the invention provides for the production of an identification label based on a previously produced base unit so that the producer of identification labels based on the base unit is able to produce an identification label which allows an optical as well as an electronic marking without the production process becoming more complex for the producer of identification

labels than in the production of known conventional identification labels which allow only an optical marking.

Depending on the type of the construction of the identification layer the identification layer can be applied directly on the base unit or subsequently to a previous application of an intermediate layer as a carrier layer for the identification layer. A paper layer can be used as the carrier layer, for example.

For producing an adhesion between the base unit and the identification layer or the carrier layer a permanent adhesion layer can be applied onto the base unit, the identification layer, or the carrier layer. Instead of the permanent adhesion layer another adhesion layer can be provided next to the initial adhesion layer as well.

It has proven particularly advantageous when, in a common process at the end of the production process for producing the identification labels, the coding of the exterior identification layer as well as the coding of the transponder unit and/or the chip unit of the transponder unit occurs in a common coding process. Thus, identification labels can be produced in a particularly easy and economical fashion which enables the recognition of identification data by means of an optical reader, based on the coding of the exterior identification layer, as well as the recognition of stored chip data by means of an electronic reader. Identification labels of such nature can equally be used in cooperation with optical and electronic reading devices, depending on equipment standard.

In the following, an embodiment of the identification label according to the invention and a

modification therefrom for producing the identification label according to the process according to the invention is described in detail with the help of the drawings. They show:

Fig. 1. an embodiment of an identification label with an exterior identification layer and a transponder unit;

Fig. 2 a partial sectional representation of the identification label shown in Fig. 1 with the particular representation of a base unit;

Fig. 3 the base unit shown in Fig. 2 having a permanent adhesion layer;

Fig. 4 an identification layer with a transponder unit integrated into a conventional layer structure according to an initial embodiment;

Fig. 5 a conventional identification label according to prior art;

Fig. 6 another identification label with a modified configuration of the transponder unit;

Fig. 7 a base unit with a reinforcement layer provided between two adhesion layers.

Fig. 1 shows an identification label 10 with an exterior identification layer 11 which is applied onto

a reinforcement layer 12 for the purpose of mechanically stabilizing the identification layer 11. On the bottom of the reinforcement layer 12 an adhesion layer 13 is provided formed from an adhesive glue application, which adhesion layer is connected tightly adhered to the bottom of the reinforcement layer 12. The adhesion layer 13 is provided with an adhesion surface 14 which is provided with a deadening layer 15 for deadening, i.e., for preventing the adhesion to a surface.

In order to better represent the separate layers of the layer structure the identification label 10 shown in Fig.l is shown in partially delaminated layers, i.e., separated from one another in partial regions, i.e., the identification layer 11, the reinforcement layer 12 with the adhesion layer 13 adhering thereto, and the deadening layer 15.

However, the left half of the identification label 10 shown in Fig. 1 is provided with a closed layer compound with separate layers, arranged directly on top of one another, in a manner equivalent to the original state of the identification label 10 prior to the separation of the deadening layer 15 from the adhesion layer 13 for application onto a surface of an object to be marked, not shown in detail here.

As discernible from the layer structure of the identification label 10 shown in Fig. 1 in a partially delaminated state the reinforcement layer 12 serves the purpose not only to be a mechanical stabilizer for the identification label 10 and/or the identification layer 11 but also simultaneously to be a substrate for arranging a transponder unit 16 as well. In the present case, the transponder unit 16 includes a chip unit, embodied here as the chip module 17, and an antenna coil 18 contacting the chip

module 17, in the present case produced of copper wire.

In Fig. 1, for better showing the arrangement of the transponder unit 16 on the reinforcement layer 12 serving as a substrate, the reinforcement layer 12 is shown consisting of a transparent material. For additional description of the arrangement of the transponder unit 16 on the reinforcement layer 12, Fig. 2 shows an enlarged partial sectional representation of the reinforcement layer 12 with the deadening layer 15 being in adhesive contact with the adhesion layer 13 embodied on the bottom of the reinforcement layer 12 in the representation according to Fig. 2. The layer compound, shown in Fig. 2, between the reinforcement layer 12 and the adhesion layer 13 applied to the bottom of the reinforcement layer 12 forms a base unit 19 which forms the identification label 10, supplemented by the identification layer 11 for forming the identification label 10 shown in Fig. 1. Here, in forming the identification layer 11 made of a material directly laminable onto a base material, the identification layer I I can be applied directly onto the upper structure surface 20 of the reinforcement layer 12 for forming the identification layer 10, for example under the influence of pressure and temperature, as in the case of the identification label 10 shown in Fig. 1.

The base and mounting unit 19, shown in Fig. 2, and formed from a layered compound of the reinforcement layer 12 and the adhesion layer 13, is provided with the transponder unit 16 in the region of a boundary layer 21 embodied between the reinforcement layer 12 and the adhesion layer 13. The chip module 17 having a chip and/or the form corpus 22, accepting the chip and called ämould" by those trained in the art, is inserted into a window opening 23 of the reinforcement layer 12 in order to enable a sunken acceptance of the chip module 17. Here, a contact carrier 24 of the

chip module 17 serves, in addition to a restricting arrangement of the chip module 17 to an application surface 25 of the reinforcement layer 12, to contact the free contact ends 26, 27 of the antenna coil 18 made of coil wire 28. As further discernible from Fig. 2, the antenna coil 18, created by laying onto the application surface 25 of the reinforcement layer 12, for instance, is positioned embedded in the application surface 25 so that all other regions or parts of the transponder unit 16 are essentially positioned in the reinforcement layer 12, except the contact carrier 24 of the chip module 17 which contacts the contact ends 26, 27 via bumps 30, 31 provided on its contact side 29. This results in an adhesion layer 13 being sufficient even in a comparatively thin layered embodiment applied on the application surface 25 of the reinforcement layer 12, in order to completely cover the transponder unit 16 and/or the contact carrier 24 of the chip module 17 with the formation of a level adhesion surface 14 of the adhesion layer 13. In the present case, a silicon paper serves as the deadening layer 15 for deadening the adhesion surface 14 of the adhesion layer 13. For activating the adhesion surface 14 the deadening layer 15 can easily be pulled off.

Fig. 3 shows the base unit 19 at the beginning of the process for producing an identification label 32 shown in Fig. 4, also being shown in a partially sectional representation. The base unit 19 shown in Fig. 3 serves as the semi-finished product for the production of the identification label 32, i.e., as an intermediate product previously produced in an independent process, which is used as a unit for the purpose of the production of the identification label 32, i.e., as a layer of the overall layer structure to be produced. For creating the overall layer structure 36, shown in Fig. 4, forming the identification label 32, initially the structure surface 20 is provided with a permanent adhesion layer 33 which can be embodied as a hot-melt layer, for example, and which can be evenly distributed over the structure

surface 20 of the reinforcement layer 12 by means of blade coating. Here, the free space 34 remaining after the insertion of the chip module 17 into the window opening 23 is at least partially filled with the adhesion material of the permanent adhesion layer 33.

Fig. 4 shows the further structure of the layers. Comparing the layer structure shown in Fig. 5 to a corresponding conventional identification label 35 according to prior art it is obvious that, in the present case, the layer structure 36 of the conventional identification label 35, which is only provided with an exterior identification layer 11, is identical with the layer structure 36 of the embodiment of the identification label 32 according to the invention, shown in Fig. 4, which is provided with the transponder unit 16 in addition to the exterior identification layer 11. As Fig. 4 clearly shows, the transponder unit 16 is essentially provided in the boundary layer 21 between the reinforcement layer 12 and the adhesion layer 13 without influencing the overall layer structure 36 thereby.

The further layers of the overall layer structure 36, built onto the permanent adhesion layer 33, concern a paper layer 37, an adhesion layer 38 for producing an adhering connection to the identification layer 11, in the present case embodied as a so-called ‚thermo-layer", for example, and a sealing layer 39 which serves as the surface protection for the identification layer 11.

The identification label 32 shown in Fig. 4 is provided with the advantageous possibility, due to its overall layer structure being identical to the overall layer structure 36 of conventional identification labels 35, to be able to mark or code the exterior identification layer 11 after the production of the overall layer structure 36 in a thermoprinting process. An essential reason is here

that, due to keeping the customary overall layer structure 36 in spite of the transponder unit 16 positioned in the overall layer structure 36, an overall thickness is allowed which enables a conventional printing of the identification label 32 in a thermoprinting process without any problems.

Fig. 6 shows a representation of an identification label 40, identical to the type of representation in Fig. 4, which is embodied identically in its overall layer structure 36 with the identification layer 32 shown in Fig. 4.

Unlike the identification layer 32, the identification layer 40 is provided with a differently configured transponder unit 41, with the transponder unit 41 still being positioned in the boundary layer 21 between the reinforcement layer 12 and the adhesion layer 13, however, as discernible from a comparison of the Figs. 4 and 6. Unlike the identification label 32, the transponder unit 41 and/or an antenna coil 42 contacting the transponder unit 41 via the chip module 17 is not embedded in the material of the reinforcement layer 12 but rather positioned on the application surface 25 of the reinforcement layer 12. The difference in arranging the antenna coil 42 of the identification label 40 compared to arranging the antenna coil 18 of the identification label 32 can be caused by the type of process used for applying the antenna coil 42 as well as the material of the reinforcement layer 12, which for example does not allow embedding. However, in any case the antenna coil 42 is covered by the adhesion layer 13 in forming a leveled adhesion layer 14 so that here the overall layer structure 36 is maintained as well, in particular the layer structure of the base unit 19.

As further discernible from Fig. 6, the reinforcement layer 12 is provided with a window opening 43

adjusted to the neighboring contours of the form corpus 22 of the chip module 17. Additionally, in the present case the form corpus 22 is adjusted in its height h to the thickness d of the reinforcement layer 12 so that essentially no clear space remains in the window opening 43 and overall an essentially level structure surface 20 of the reinforcement layer 12 and/or the base unit 19 results. With regard to the material selection for the reinforcement layer 12 the use of polypropylene has proven particularly advantageous since here a particularly easy embedding of the antenna coil 18 is possible, as shown in the exemplary embodiment of the identification label 32 in Fig. 4. As discernible from Fig. 6 and from the descriptions related to Fig. 6 respectively, corresponding material characteristics are not necessary, though, since even a rather superficial application of the antenna coil 42 onto the application surface 25 of the reinforcement layer 12 is possible just as well, without thereby influencing the overall layer structure 36. Thus, any material can be selected for the reinforcement layer 12 as long as the initial mechanically stabilizing function of the reinforcement layer 12 remains.

Although not shown in detail here, it is also possible to use transponder units in which the antenna coil and/or the contact ends of the antenna coil directly contact the chip, for example in directly providing the chip contact surfaces with bumps for contacting the contact ends of the antenna coil, unlike the transponder units 16 and/or 41 shown in Figs. 4 and 6 and which each relate to a chip module 17 in contact with an antenna coil 18 or 42 respectively. Therefore, in such an embodiment of the transponder unit the contact carrier 24 of the chip module 17 is omitted. However, it can be advantageous for a transponder unit produced in a direct connection of the chip to the antenna coil to provide a separate reinforcement device, peripherally surrounding the chip, which keeps adverse mechanical stresses away from the chip during the production of the layer structure, for example in

the lamination process. However, such reinforcement devices can be advantageous for the utilization of the chip module 17 shown by way of example in Figs. 4 and 6 as well, in order to protect the chip provided in the form corpus 22. Fig. 4 shows, outlined in a dot-dash pattern, the possible exemplary embodiment of a reinforcement device embodied here as a ring-shaped support bush 44.For installing the support bush 44, it is inserted into the window opening 23, as indicated in Fig. 4, prior to the insertion of the form corpus 22 of the chip module 17.

Unlike the base unit 19 shown in Fig. 3 which is provided with a permanent adhesion layer 33, Fig. 7 shows a base unit 45 with a reinforcement layer 46 which is provided on its structural surface 20 with a second adhesion layer 47, which can be identical in its composition to the adhesion layer 13 and which like the adhesion layer 13 can be embodied by an adhesive glue layer.

As further shown in Fig. 7, in addition to a window opening 48 for accepting the form corpus 22 of the chip module 17 surrounding the chip, the reinforcement layer 46 is provided with two additional window openings 49, 50 which allow a contacting access to the contact ends 26, 27 of the antenna coil 18 embedded in the reinforcement layer 46 during the construction of the base unit 45. Hereby, subsequently to the embedding of the antenna coil 18 and prior to the application of the adhesion layers 13, 47 onto the reinforcement layer 46 the chip module 17 is applied onto the application surface 25 of the reinforcement layer 46, simultaneously inserting the form corpus 22 into the window opening 48. Through the window openings 49, 50 the contact ends 26, 27 of the antenna coil 18 can be accessed in the region of the contact surfaces 51, 52 on the contact side 29 of the contact carrier 24 of the chip module 17so that contacting the contact ends 26, 27 is possible by the contact surfaces

51, 52 from above, where the structure surface 20 of the reinforcement layer 46 is arranged, by means of suitable bonding tools, not depicted in detail here. Subsequently, the adhesion layers 13 and 47are applied onto the structural surface 20 and the application surface 25of the reinforcement layer 46. Here, the adhesive glue material used for the construction of adhesion layers 13, 47 can be used for leveling unevenness and at least partially filling hollow spaces. The base unit 45 provided with another adhesion layer 47, shown in Fig. 7, can be modified into a ‚transponder tag" in a most easy fashion by applying deadening layers, here not shown in detail, which also allow a mounting onto objects with mounting means, such as tape or the like.

Claims

1. An identification label for surface mounting or for mounting around an object, provided with a multi-layered layer structure with an identification layer for optical marking, a reinforcement layer for mechanical stabilization of the identification layer, and an adhesion layer for mounting the identification label to the object, characterized in that the reinforcement layer (12, 46) serves as the substrate for arranging a transponder unit (16, 41).

2. An identification label according to claim 1, characterized in that the transponder unit (16, 41) extends in a boundary layer (21) formed between the reinforcement layer (12, 46) and the adhesion layer (13).

3. An identification label according to claim 1 or 2, characterized in that the adhesion layer (13) is covered by a deadening layer (15) and the reinforcement layer (12, 46) is provided with a mounting device for mounting the identification label to the object.

4. A base unit for producing an identification label for surface mounting or mounting around an object, including a reinforcement layer and an adhesion layer, characterized in that the reinforcement layer (12, 46) serves as a substrate for arranging a transponder unit (16, 41) in a boundary layer (21) formed between the reinforcement layer (12, 46) and the adhesion layer (13).

5. A base unit according to claim 4, characterized in that the reinforcement layer (12, 46) is provided with a window opening (23, 43, 48) for at least proportionally accepting a chip unit (17) and the chip unit contacting an antenna coil (18, 42) made of wire (28) for forming the transponder unit (16, 41).

6. A base unit according to claim 5, characterized in that the reinforcement layer (12) is provided with additional window openings (49, 50) for accessing the contact regions (51, 52) of the chip unit (17).

7. A base unit according to claim 5 or 6, characterized in that the chip unit (17) is at least partially surrounded by a reinforcement device (44) surrounding the chip unit and extending in the level of the reinforcement layer (12, 46).

8. A base unit according to one or more of the claims 5 through 7, characterized in that the antenna coil (41) is positioned on the reinforcement layer (12) and is covered by the adhesion layer (13), forming a plane adhesion surface (14).

9. A base unit according to one or more of the claims 5 through 7, characterized in that the antenna coil (18) is at least proportionally embedded in the reinforcement layer (12, 46) and is covered by the adhesion layer (13, 47), forming a plane adhesion surface (14).

10. A base unit according to one or more of the claims 4 through 9, characterized in that the adhesion surface (14) of the adhesion layer (13, 47) is covered by a deadening layer (15).

11. A base unit according to claim 10, characterized in that the deadening layer is embodied by the clear surface of the reinforcement layer (12, 46) of an additional base unit (19).

12. A process for producing an identification label according to one or more of the claims 1 through 3, characterized in that a base unit (19) according to one or more of the claims 4 through 11is provided and an identification layer (11) is applied onto the base unit (19).

13. A process according to claim 12, characterized in that a carrier layer (37) is applied onto the base unit (19, 45) prior to applying the identification layer (11) for forming an intermediate layer.

14. A process according to claim 12 or 13, characterized in that a permanent adhesion layer (33) is applied onto the base unit (19), the identification layer (11), or the carrier layer (37) in order to be mounted between the base unit (19) and the identification layer (11) or the carrier layer (37).

15. A process according to claim 12 or 13, characterized in that an additional adhesion layer

(47) is applied onto the base unit (45), the identification layer (11), or the carrier layer (37) in order to be mounted between the base unit (45) and the identification layer (11) or the carrier layer (37).

16. A process according to one or more of the claims 12 through 15, characterized in that the coding of the identification layer (11) and the coding of the transponder unit (16, 41) occur in a common coding process.

Abstract

An identification label (10) for surface mounting on or mounting around objects, provided with a multi-layered layer structure with an identification layer (11) for optical marking, a reinforcement layer (12) for mechanical stabilization of the identification layer, and an adhesion layer (13) for mounting the identification label on the object with the reinforcement layer serving as a substrate for arranging a transponder unit (16).

(Fig. 1)

Amended sheet 1

Identification Label and Process for Producing an Identification Label

5

The present invention relates to an identification label with a transponder unit for surface mounting on or for mounting around an object provided with a multi-layered layer structure with an identification layer for optical marking, a reinforcement layer for mechanical stabilization of the identification layer and an adhesion layer for mounting the identification label on the object. Furthermore, the invention relates to a process for producing such an identification label as well as additionally a base unit for producing the identification label. Identification labels of the type mentioned in the outset are generally embodied as so-called äself-adhesive labels" for marking objects. A particularly large range of use is the field of luggage identification of airfreight parcels. Here, labels are used which are provided with an essentially three-layered structure in the applied state, namely one identification layer, oriented visibly outwards for the purpose of the primary identification of the corresponding luggage parcel which is provided with an optical marking, a reinforcement layer which serves as a carrier layer for the identification layer and its mechanical stabilization, and finally an adhesion layer which enables an adhesive mounting to the luggage parcel when contacting the surface of the corresponding luggage parcel.

The particular advantage of the known identification labels consists in their flexible nature, which enables an application of the labels not only on plane surfaces but on sharply curved surfaces as well, such as handles, for example.

In order to enable a touchless identification of the luggage parcels provided with the identification labels even at greater distances, in addition to an optical marking on the exterior identification layer of the identification label by means of so-called äbar-codes" and alphanumeric markings, it is desirable to combine the identification labels known per se with so-called transponder units which enable a touchless access to the information stored in a chip unit of the transponder unit. The chip unit contacts an antenna coil and forms the transponder unit together therewith. For this purpose, the chip unit and the antenna coil are positioned on a common transponder substrate. Attempts to combine such a transponder unit with an identification label known per se for creating an overall identification label that allows an electronic marking in addition to an optical marking lead to an overall label structure in which a conventional identification label is supplemented with a transponder unit provided on the transponder substrate. Thus, an additional layer was added to the multi-layered layer structure of the conventional identification layer in form of the substrate of the transponder unit.

However, this change of the overall layer structure of the identification label results in disadvantages regarding the thickness and the flexibility of identification labels of such nature.

In EP-A-O 595 549 an identification label with a transponder and marking is known with the transponder provided on a transponder substrate being combined with a conventional identification label.

Amended sheet 2a

The invention is therefore based on the object to create an identification label improved in its functionality by means of a transponder unit without disadvantageous modifications to the layer structure of the identification label.

Amended sheet 16

Claims

1. An identification label with a transponder unit for surface mounting on or mounting around an object provided with a multi layered layer structure with an identification layer for optical marking, a reinforcement layer for mechanical stabilization of the identification layer, and an adhesion layer for mounting the identification label on the object, characterized in that the reinforcement layer (12, 46) serves as a substrate for arranging the transponder unit (16, 41).

2. An identification label according to claim 1, characterized in that the transponder unit (16, 41) extends in a boundary layer (21) formed between the reinforcement layer (12, 46) and the adhesion layer (13).

3. An identification label according to claim 1 or 2, characterized in that the adhesion layer (13) is covered with a deadening layer (15) and the reinforcement layer (12, 46) is provided with a

reinforcement device for mounting the identification label onto the object.

4. A base unit as a semi-finished product for producing an identification label with a transponder unit for surface mounting on or for mounting around an object, including a reinforcement layer and an adhesion layer, characterized in that the reinforcement layer (12, 46) serves as a substrate for arranging the transponder unit 30 (16, 41) in a boundary layer (21) formed between the reinforcement layer (12, 46) and the adhesion layer (13).

Amended sheet 17

5. A base unit according to claim 4, characterized in that the reinforcement layer (12, 46) is provided with a window opening (23, 43, 48) for at least proportionally accepting a chip unit (17) and the chip unit contacts an antenna coil (18, 42) made of wire (28) for forming the transponder unit (16, 41).

6. A base unit according to claim 5, characterized in that the reinforcement layer (12) is provided with additional window openings (49, 50) for accessing the contact regions (S 1, 52) of the chip unit (17).

7. A base unit according to claim 5 or 6, characterized in that the chip unit (17) is at least partially surrounded by a reinforcement device (44) surrounding the chip unit and extending in the plane of the reinforcement layer (12, 46).

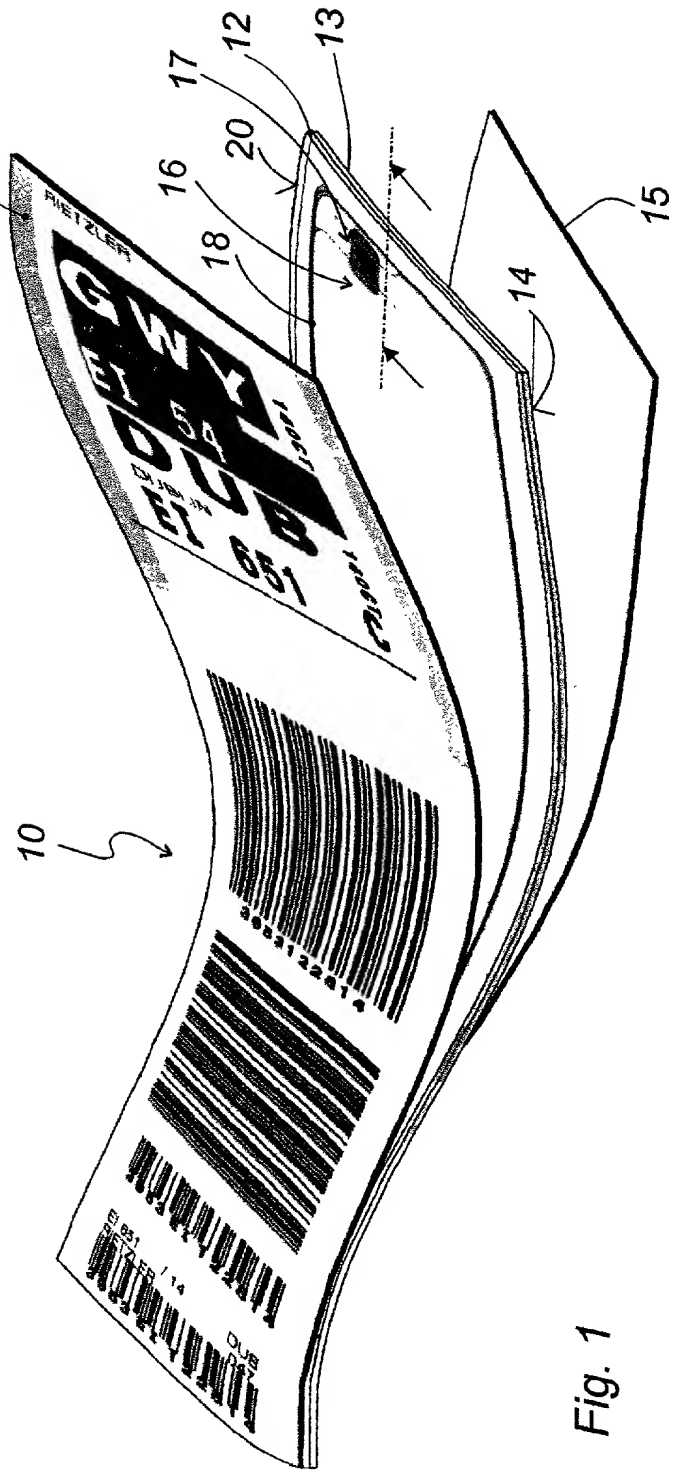

Fig. 1

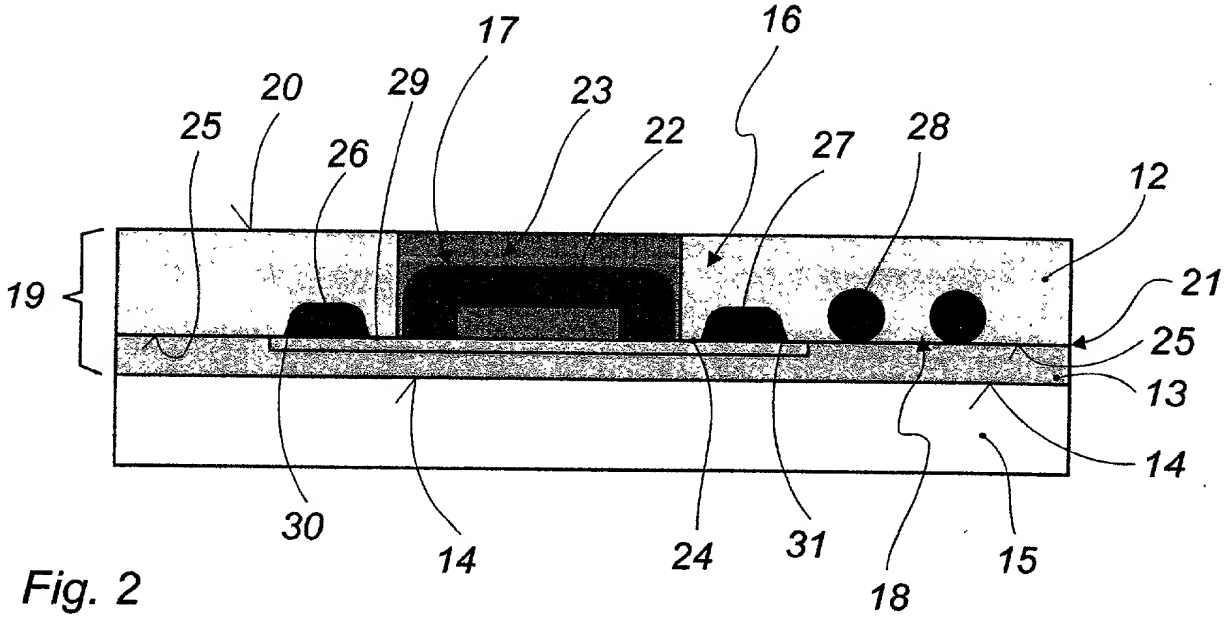
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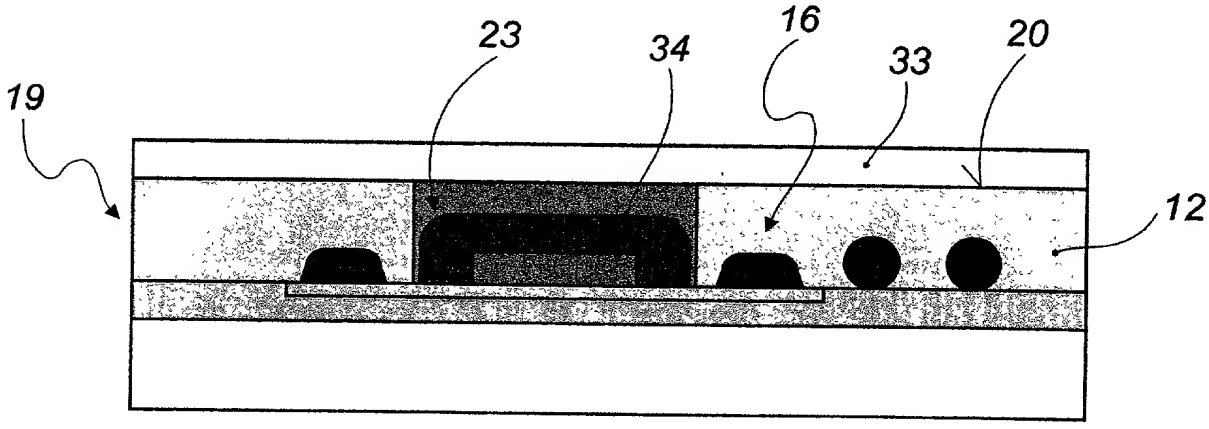
Fig. 2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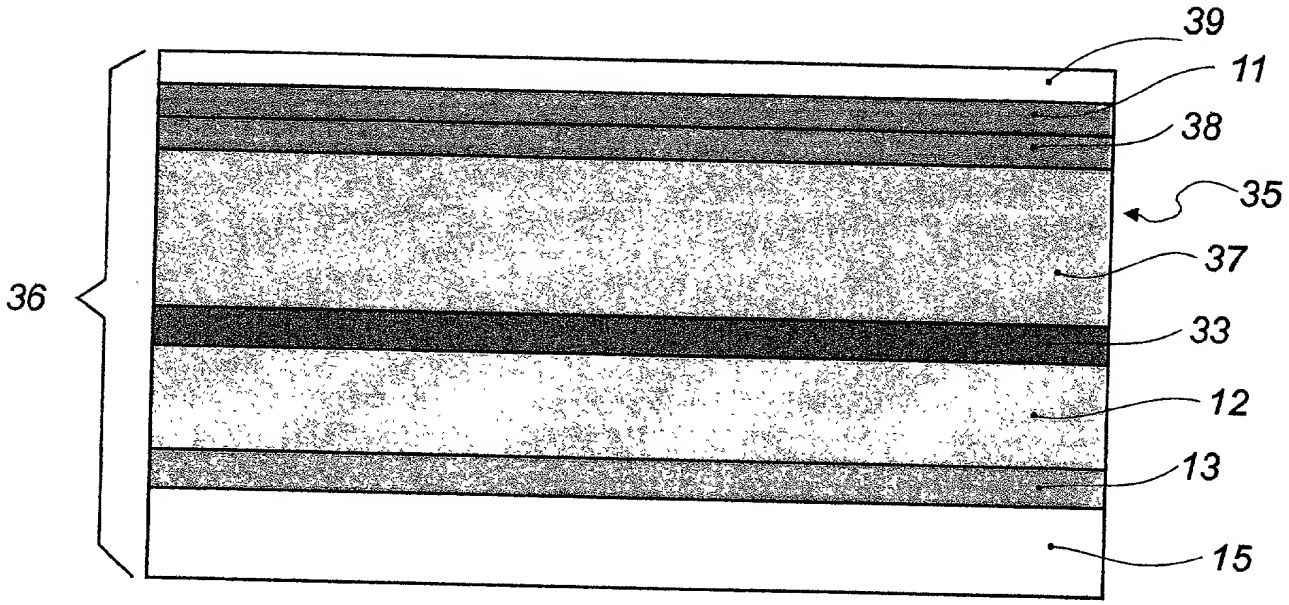
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Fig. 5

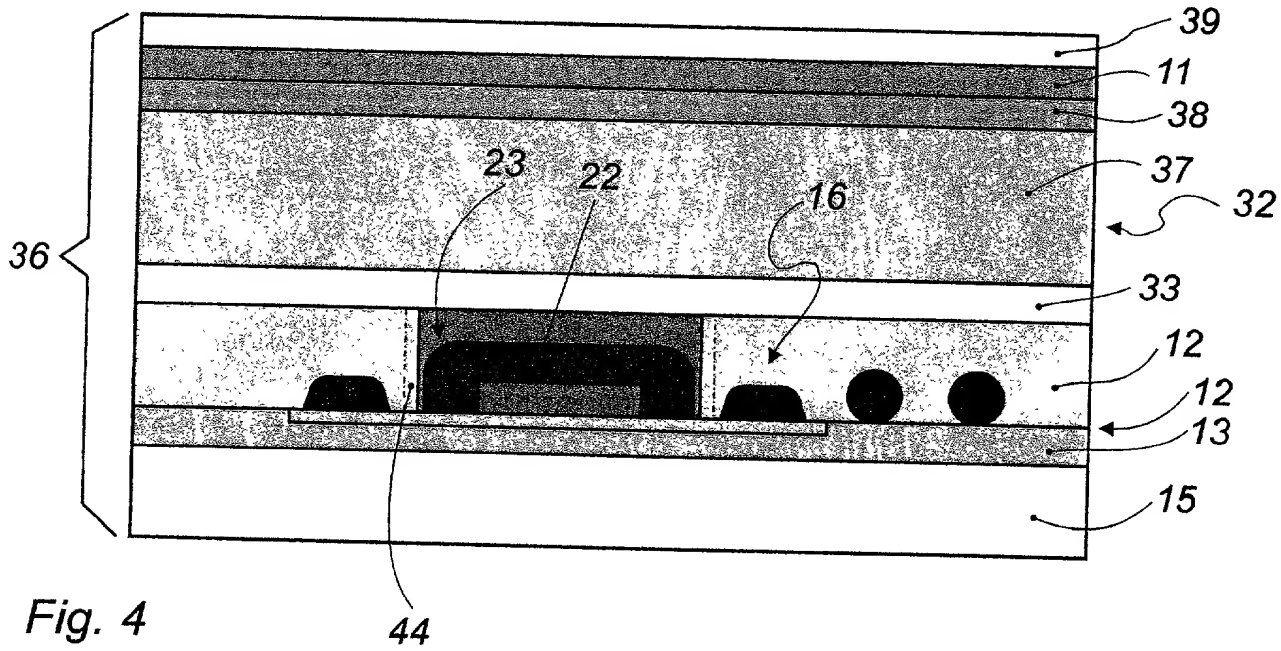
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Fig. 4

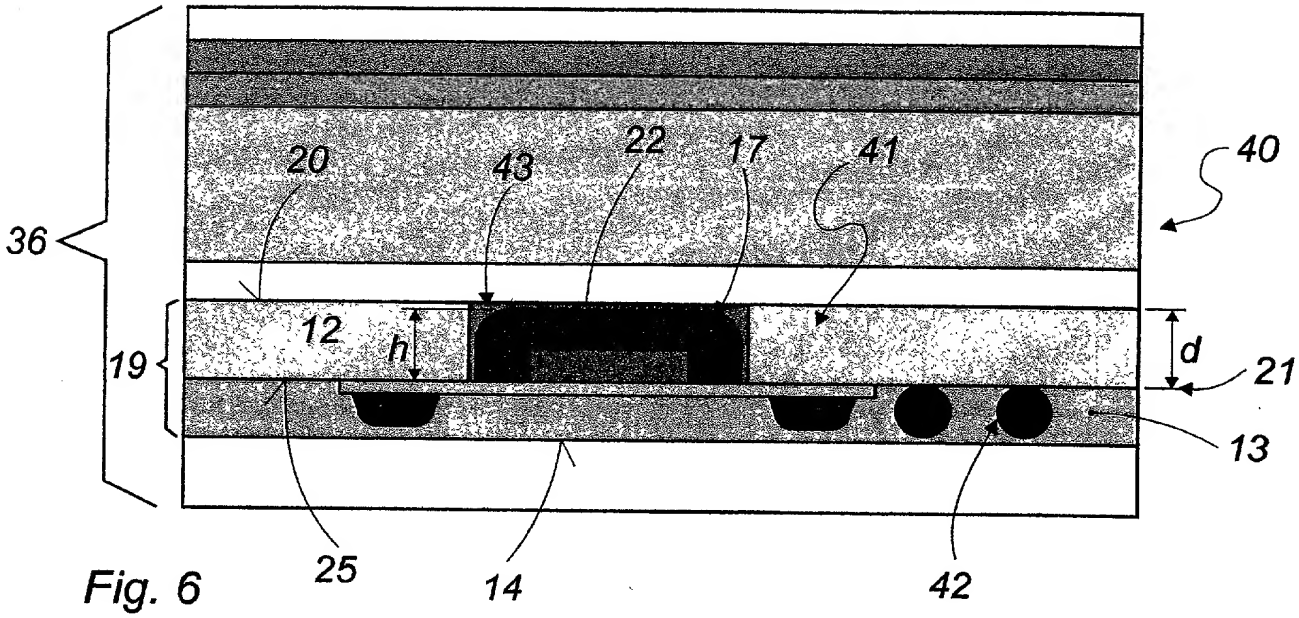
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Fig. 6

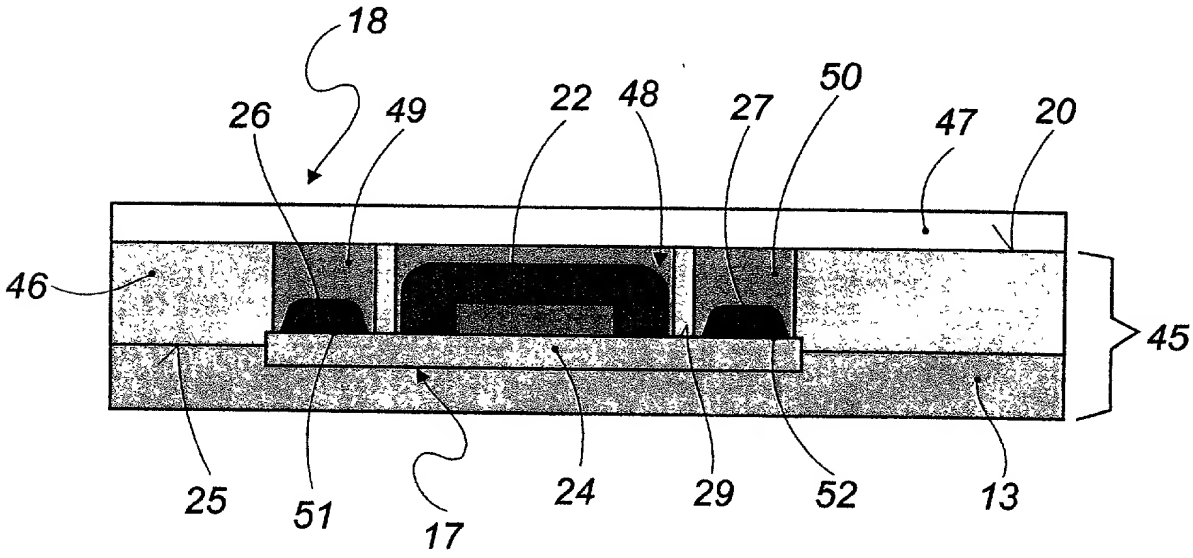
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Fig. 7

DECLARATION FOR PATENT APPLICATION

Docket No.70128

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: *IDENTIFICATION LABEL AND PROCESS FOR PRODUCING AN IDENTIFICATION LABEL*

the specification of which

(Check one) [] is attached hereto.
[X] was filed as PCT international application
Number PCT/DE99/03448
on 28/October/1999
and was amended under PCT Article 19
on _

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, 119 (a)-(d) or 365 (b) of any foreign application(s) for patent or inventor's certificate or 365 (a) of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date or any PCT international application(s) designating at least one country other than the United States of America by me on the same subject matter having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed
198 50 353.9 (Number)	Germany (Country)	2/November/1998 (Day/Month/Year filed)	Yes

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this

application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code 112. I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No)	(Filing Date)	(Patented,Pending,Abandoned)

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: **John J. McGlew, Reg. 17,722; and/or John James McGlew, Reg. 31,903; and/or Hilda S. McGlew Reg. 30,295; and/or Theobald Dengler, Reg. 34,575; and/or Clario Ceccon, Reg. 19,268; and/or Kristina M. Grasso Reg. 39,205.**

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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70128.3

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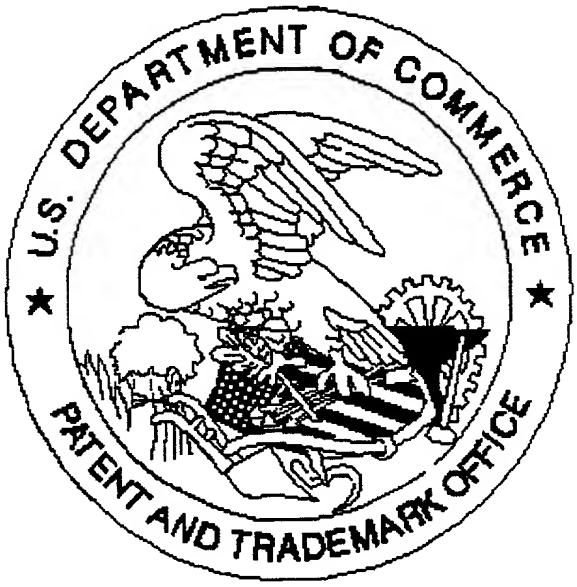

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